# Oracle Hardware Certification Test Suite 5.6

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# Preface

Oracle Hardware Certification Test Suite (Oracle HCTS) is an application that can be downloaded freely from the Oracle HCTS web site to certify your system for the Oracle Solaris Operating System (OS) compatibility. To use Oracle HCTS, your system should be installed with the Oracle Solaris OS and must be ready for use.

This book describes how to certify that your system hardware is compatible with the Oracle Solaris OS by using the Oracle HCTS application.

## Who Should Use This Book

The *Oracle Hardware Certification Test Suite 5.6 User Guide* is for the independent hardware vendors (IHVs), system manufacturers, system integrators, system administrators, and end users who want to perform the following operations with their system devices.

- Certify system hardware as Oracle Solaris platform compatible.
- Certify network-related components such as Ethernet, NIC and WiFi card.
- Certify serial I/O devices.
- Certify storage devices such as SATA, SAS, SCSI, Fiber Channel, and iSCSI.
- Certify the InfiniBand Host Channel Adapter (HCA).
- Certify audio and video devices.
- Certify the CD/DVD reader and writer.
- Certify USB devices such as the USB CD/DVD reader and writer, USB keyboard, USB web cam, USB hard disk, solid-state storage device, and multimedia card reader.
- Test CPU, memory, Suspend/Resume, network performance feature, storage performance feature, USB audio device and FMA feature.
- Certify systems and components for the Oracle Solaris 11 OS.
- Certify virtual platforms.
- Certify tape drive devices.
- Certify external storage devices.
- Certify FCoE devices.

The guide assumes that developers have sufficient knowledge about the Oracle Solaris OS.

# Before You Read This Book

Before reading this book, you must be familiar with the following documents to get the release information of the Oracle Hardware Certification Test Suite (Oracle HCTS) application that you have downloaded.

- Oracle HCTS 5.6 README
- Oracle HCTS 5.6 Release Notes

If the Oracle Solaris operating environment is not installed on your system, see the installation manual specific to your system before you read this book.

# How This Book Is Organized

Here is a list of topics that are covered by the Oracle HCTS User Guide.

- Chapter 1, "Getting Started With Oracle HCTS," describes the general overview of the Oracle HCTS application and its benefits. It also explains how to configure test machines to create the Oracle HCTS environment.
- Chapter 2, "System Requirements," describes requirements for installing and running Oracle HCTS and certifying the devices and systems for the Oracle Solaris OS compatibility based on the type of certification. It also includes the individual description of the certification type and the hardware and software requirements for the corresponding certification type.
- Chapter 3, "Installing Oracle HCTS," discusses the procedure for installing Oracle HCTS and the other necessary configurations. It also includes the procedure to uninstall Oracle HCTS after the testing is complete.
- Chapter 4, "Working With Oracle HCTS," provides information about accessing Oracle HCTS in the GUI mode and the CLI mode.
- Chapter 5, "External Storage Certification," describes the hardware and software requirements, environment setup and certification procedure for external storage device.
- Chapter 6, "WiFi Test Environment Setup," describes the software requirements and environment setup procedure for WiFi certification.
- Chapter 7, "Certifying the Virtual Platform," describes the software requirements and the environment setup procedure for virtual platform certification.
- Chapter 8, "Manual Tests," explains mandatory manual tests that are a part of certification tests. Although these manual tests are not included in an automated Oracle HCTS program, you must carry them out to certify your system component. Report test results to HCL auditing team, if necessary.

- Appendix A, "Tools in `/opt/SUNWhcts/bin`," provides a quick reference to the tools that exist in the `/opt/SUNWhcts/bin` directory.
- Appendix B, "Suspend/Resume Checklist," provides a checklist for user to record the Oracle HCTS Suspend/Resume test results.
- Appendix C, "Manual Network Configuration," describes manual network configuration on System Under Tests (SUT) and Test Manager (TM).

# Related Documentation

Refer the online help if you are using the graphical user interface (GUI) of Oracle HCTS for certification.

Refer to the man pages for the commands `hctscli` and `hctsclid` if you want to use the command line interface (CLI) of Oracle HCTS.

# Typographic Conventions

The following table describes the typographic conventions that are used in this book.

**TABLE P–1** Typographic Conventions

| Typeface | Meaning | Example |
|---|---|---|
| `AaBbCc123` | The names of commands, files, and directories, and onscreen computer output | Edit your `.login` file.<br>Use `ls -a` to list all files.<br>`machine_name% you have mail.` |
| **`AaBbCc123`** | What you type, contrasted with onscreen computer output | `machine_name%` **`su`**<br>`Password:` |
| *aabbcc123* | Placeholder: replace with a real name or value | The command to remove a file is `rm` *filename*. |
| *AaBbCc123* | Book titles, new terms, and terms to be emphasized | Read Chapter 6 in the *User's Guide*.<br>A *cache* is a copy that is stored locally.<br>Do *not* save the file.<br>**Note:** Some emphasized items appear bold online. |

# Shell Prompts in Command Examples

The following table shows the default UNIX system prompt and superuser prompt for shells that are included in the Oracle Solaris OS. Note that the default system prompt that is displayed in command examples varies, depending on the Oracle Solaris release.

**TABLE P–2** Shell Prompts

| Shell | Prompt |
|---|---|
| Bash shell, Korn shell, and Bourne shell | `$` |
| Bash shell, Korn shell, and Bourne shell for superuser | `#` |
| C shell | `machine_name%` |
| C shell for superuser | `machine_name#` |

◆ ◆ ◆ CHAPTER 1

# Getting Started With Oracle HCTS

Oracle Hardware Certification Test Suite (Oracle HCTS) is an application that includes several tests for the Oracle Solaris Operating System (OS) Hardware Certification Program. Oracle HCTS enables you to certify your systems, components, and virtual platforms for the Oracle Solaris OS SPARC and x86 platforms. This tool is useful for independent hardware vendors (IHVs), system manufacturers, and system integrators.

Be sure to download the most updated version of Oracle HCTS. Check the Oracle HCTS web site frequently to see whether a newer version is available. Before installing Oracle HCTS, back up your test systems and install the most updated version of the Oracle Solaris OS SPARC and x86 platforms. See the Oracle Solaris web site to check for a newer version of the Oracle Solaris OS.

This chapter contains the following information.


- "Benefits of Oracle HCTS" on page 11
- "Configuring Test Machines to Run Oracle HCTS" on page 12
- "Creating the Oracle HCTS Test Environment" on page 14


## Benefits of Oracle HCTS

By participating in the Oracle Solaris OS Hardware Certification Program and successfully completing the test by using Oracle HCTS, system vendors, original equipment manufacturers (OEMs), and IHVs have the following benefits.

- Systems and components are listed in the Oracle Solaris OS Hardware Compatibility List (HCL).
- Customers get a choice of platforms for the hardware components that they purchase. The device drivers and the certified components that they support gain increased exposure to customers whose purchasing policy requires them to select certified peripherals.
- Compete in new markets and help your products stay competitive in current markets thereby increasing the product sales.

- Establish a link to the HCL entry of the Oracle Solaris system certified product on your product web site. HCL entries can also point to your driver download page.
- The certification process can be completed quickly and is free of charge.

If hardware passes all the tests after running the Oracle HCTS application at the first pass, that hardware is listed under the Certified category of the HCL.

The hardware that fails to clear one or more tests at the first round after running the Oracle HCTS application, is listed under the Reported to Work category of HCL. The hardware under the Reported to Work category can be later updated to the Certified category once the hardware passes all the tests of Oracle HCTS.

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**Note –** Before you use Oracle HCTS, be sure to check whether the system that you want to test is already listed on the Oracle Solaris OS HCL as Certified.

---

# Configuring Test Machines to Run Oracle HCTS

To test systems, InfiniBand, network components, network performance, WiFi, Suspend/Resume feature, and serial I/O components and NIC FMA test, you need two test machines with the following details.

- System Under Test (SUT) - System to certify or the system that has the device that you want to certify.
- Test Manager system (TM) - System that is used by the SUT to test system, network, InfiniBand, WiFi, Suspend/Resume feature, network performance feature, and serial I/O devices. The TM should be a system that is already listed on the HCL as Certified.

Storage, storage performance, CD or DVD reader and writer, video, audio, CPU memory, USB devices, tape drive devices, Performance Monitor, Storage FMA test and virtual platforms certifications require only SUT to be configured.

To test external storage devices, you need four machines. For more information, see the Chapter 5, “External Storage Certification.”

To test FCoE devices, refer to the requirements of storage and network testing, as FCoE testing requires storage and network certification to be done on FCoE devices.

Table 2–1 lists the types of tests and its requirements. It also indicates the number of machines required for each test. The entry Required indicates that the particular type of certification requires the respective number of test machines. For example, to do system certification, you might need two test systems.

**TABLE 1–1** Machine Requirements

| Type of Test | Requires SUT and TM: | Requires Only SUT |
|---|---|---|
| **System Certification** | Required | NA |
| **Network Component Certification**<br>■ 10 GB Ethernet<br>■ GB Ethernet<br>■ Fast Ethernet | Required | NA |
| **Serial I/O Component Certification**<br>■ Serial Asynchronous Interface/PCI (SAI/P) | Required | NA |
| **Storage Component Certification**<br>■ SATA, SCSI, iSCSI, RAID, Fibre Channel, and SAS | NA | Required |
| **CD-ROM or DVD-ROM, CD-RW or DVD-RW, CPU or Memory, Audio, Video, and Component Testing** | NA | Required |
| **USB Device Certification**<br>■ Keyboard, CD-DVD ROM, CD-DVD RW, web cam, and storage devices<br>■ USB Audio device test | NA | Required |
| **WiFi Card Certification** | Required | NA |
| **InfiniBand Component Certification** - InfiniBand Host Channel Adapter (HCA) | Required | NA |
| **InfiniBand SR-IOV Virtual Functions testing** | Required | NA |
| **Suspend/Resume Test** | Required | NA |
| **Virtual Platform Certification** | Required | NA |
| **Tape Drive Certification** | NA | Required |
| **Network Performance Test** | Required | NA |
| **Storage Performance Test** | NA | Required |
| **FCoE Certification** | Required | NA |

**TABLE 1–1** Machine Requirements *(Continued)*

| Type of Test | Requires SUT and TM: | Requires Only SUT |
|---|---|---|
| **Performance Monitor** | NA | Required |
| **FMA Test** | | |
| ■ **NIC FMA Test** | Required | NA |
| ■ **Storage FMA** | NA | Required |

# Creating the Oracle HCTS Test Environment

The Oracle HCTS environment is created based on the type of hardware or system that needs to be certified. Based on the method of creating test environment, the hardware or systems can be categorized in the following three groups.

- System, network, InfiniBand, InfiniBand SR-IOV Virtual Functions, WiFi, Suspend/Resume feature, network performance feature, serial I/O, and NIC FMA testing that requires TM and SUT.
- FCoE testing requires storage certification and network certification to be done on FCoE devices. For FCoE requirement, refer to the requirements of storage and network testing.
- External Storage Testing that required four machines. For more information, see Chapter 5, "External Storage Certification."
- USB, storage, storage performance, CD/DVD, CPU/Memory, audio, tape drive, video, and Storage FMA testing that requires only the SUT.

◆ ◆ ◆ CHAPTER 2

# System Requirements

The system requirements for certification by using Oracle HCTS depends on the hardware or the system to be tested. This chapter explains in detail the hardware and software requirements for each type of system and hardware certification.

This chapter contains the following information.


- "Certifying System, Network, InfiniBand, InfiniBand SR-IOV Virtual Functions, Suspend/Resume, Network Performance Serial I/O Devices and NIC FMA Devices" on page 15
- "Certifying USB, Storage, Storage performance, CD/DVD, CPU or Memory, Audio, Tape Drive, Video, Performance Monitor and Storage FMA Devices" on page 19
- "Certifying FCoE on Converged Network Adapter (CNA)" on page 23


## Certifying System, Network, InfiniBand, InfiniBand SR-IOV Virtual Functions, Suspend/Resume, Network Performance Serial I/O Devices and NIC FMA Devices

To certify system, network, InfiniBand, Suspend/Resume, network performance and serial I/O devices, configure two test machines, TM and SUT. This section explains the hardware and software requirements to certify system, network, InfiniBand, and serial I/O devices.

### Hardware Requirements

TM and SUT systems must meet the following hardware requirements.

- Network - Both systems must be nonproductive systems on an isolated network segment. Network certification might generate a flood of traffic on other systems in the network.
- Free space - Each system must have at least (*number-of-network-ports*) x (1.5 GB) free space in the `/export/home` directory.

Type the following command to verify this requirement.

```
# df -h
```

- Serial cable - For serial I/O testing only. A serial cable must connect the serial port of the TM with that of the SUT.
- InfiniBand switch - For InfiniBand and InfiniBand SR-IOV Virtual Functions testing only. An InfiniBand cable must connect the InfiniBandHCA ports of the TM and SUT systems to the InfiniBand switch. InfiniBand SR-IOV Virtual Functions testing requires primary domain as SUT and logical domain as TM. InfiniBand SR-IOV Virtual Functions need to be added in primary domain and logical domain before testing. For more information on how to use InfiniBand SR-IOV Virtual Functions, see Using InfiniBand SR-IOV Virtual Functions in *Oracle VM Server for SPARC 3.1 Administration Guide*.

SUT should satisfy the following hardware requirements.

- Floating point - The SUT must have hardware floating point support. To check whether the SUT processor has floating point support, type `psrinfo -v` in the terminal. If the output sentence contains the phrase, `and has an i387 compatible floating point processor`, the processor has the floating point support.
- Free space - With the free space requirement for both systems, the SUT must have the following free space:
  - Swap space of at least 1/8 the physical memory size (a minimum 512 Mbytes).
  - At least 4 Gbytes of free space in any single Oracle Solaris slice or a non reserved hard disk larger than 16 GBytes.

    Type the following command to check free space.

    ```
    # df -h
    ```

  A non reserved disk does not contain any slice mounted to the following directories, `/`, `/usr`, `/opt`, `/var`, or `/export/home*`.
- Network - The SUT must have at least one port. Each port on the SUT must be connected to the TM system. For InfiniBand HCA certification, at least one port on the SUT must be connected to the TM system.
- Network Performance - The SUT must have meet the `Uperf` tool requirement.
- At least one USB storage disk, an audio play and record device, and one USB or built-in web camera attached to the SUT machine.

**Caution –** For system certification, if the SUT contains more than one disk drive, any disk that does not have any slice mounted to`/`, `/usr`, `/opt`, `/var`, or `/export/home*` is formatted. All data on such a disk is lost. During the test initialization process, any disk that is scheduled to be formatted is listed. The initialization process waits for 60 seconds and prompts you to stop the certification if you do not want the disk to be formatted.

TM should satisfy the following hardware requirements.

- Network - The TM system must have one functional network port for each network port on the SUT. The TM system must have at least as many network ports as that of the SUT. Each port on the SUT must be connected to the TM system. The TM system must not have more than five ports than that of the SUT. For InfiniBand HCA certification, at least one port on the SUT must be connected to the TM system.
- Network Performance - The TM system must have meet the `Uperf` tool requirement.

You also require an InfiniBand switch for testing InfiniBand. The Infiniband switch is required to connect the InfiniBand HCA port of the TM to that of the SUT.

## Software Requirements

For certifying the system, network, InfiniBand, Suspend/Resume, network performance and serial I/O devices, configure TM and SUT.

You can choose any of the following configurations.

- The test environment must consist of only one TM system and a SUT in an isolated network segment. Additional systems must be tested separately.
- If your TM system or your SUT matches the following description, you must disable NIS.
  - The Oracle Solaris OS is installed on the machine and you do not reinstall the Oracle Solaris OS before running Oracle HCTS.
  - NIS is set up and enabled on the machine.
  - You disconnect the machine from another network and reconnect it to the isolated network segment of the test environment.

  In the above mentioned conditions, if you do not disable NIS, the system behaves abnormally due to inconsistent network settings.

  Type the following command to disable NIS.

  ```
  # /usr/lib/netsvc/yp/ypstop
  ```

  This command disables NIS until the next reboot.

  To permanently disable NIS, type the following command.

  ```
  # svcadm disable svc:/network/nis/client:default
  ```
- Ensure that `XWindows` is running on the SUT.
- If you are certifying either your system, network, Suspend/Resume, network performance, or serial I/O, ensure that the TM system is correctly connected to the SUT in the following manner.

- All the ports in the SUT must be correctly connected to the TM system. No port should be left unconnected on the SUT. For the network component certification, all the ports of the network component must be connected to the TM System. For serial I/O certification, at least one port must be connected to the TM System.
- Connect TM and SUT back-to-back by using a crossover cable or a private switch. Oracle HCTS assigns a particular range of IP addresses to the TM system and a different range of IP addresses to the SUT system. Network devices on the TM system must allow their IP addresses to be temporarily changed to `10.10.n.11/24`, where `n` is 10, 11, 12... for multiple ports. Network devices on the SUT must allow their IP addresses to be temporarily changed to `10.10.n.10/24`, where `n` is 10, 11, 12... for multiple ports. All the network devices between the TM system and the SUT must allow these IP addresses.

  If you have routers, intelligent switches, gateways, or VLAN between the TM system and the SUT, configure them to enable the IP addresses that are specified above.
- For serial I/O certification, set up the serial ports. Ensure that at least one pair of serial ports is connected between the TM system and the SUT.

---

**Note –** For the tests that require TM, make sure the following services are available on both SUT and TM.

```
svc:/network/physical:default
svc:/network/shell:default
svc:/network/ftp:default
svc:/network/rpc/spray:default
svc:/network/nfs/client:default
svc:/network/nfs/mapid:default
```

Use `svcs` command to check the service availability, use `pkg` command to install the missing services. For the package names of the missing services, refer to the following mapping table.

| svc name | Package name |
|---|---|
| `svc:/network/physical:default` | `system/network` |
| `svc:/network/shell:default` | `service/network/legacy-remote-utilities` |
| `svc:/network/ftp:default` | `service/network/ftp` |
| `svc:/network/rpc/spray:default` | `service/network/spray` |
| `svc:/network/nfs/client:default` | `system/file-system/nfs` |
| `svc:/network/nfs/mapid:default` | `system/file-system/nfs` |

- Make sure that the TM system is properly connected to the SUT. If you are doing InfiniBand HCA certification, TM is connected to SUT through the network and InfiniBand switch.

Make sure that the TM system is correctly connected to the SUT in the following manner.

- Each port of the InfiniBand HCA to be certified must have one dedicated InfiniBand switch to connect. Each InfiniBand switch involved in the test process must connect to one port of the TM system.
- At least one network port on the SUT must be connected to a port on the TM system.

---

**Note –** In this release of Oracle HCTS, InfiniBand HCA certification can certify only one InfiniBand HCA at a time. If more than one InfiniBand HCA has a driver in Oracle Solaris, none of them can be certified.

---

- The Oracle Solaris 11 OS is required for the Suspend/Resume test. You need to perform both manual and the automatic tests and fill the test results in the Suspend/Resume Checklist in the Appendix B.
- If you are testing network performance, please make sure `uperf` is installed on the System Under Test (SUT) and the Test Manager system (TM).

  Also, a configuration file must be generated to show where the `uperf` is installed on SUT and TM. The expected format of the file is as follows.

  ```
  sut_uperf_install_path tm_uperf_install_path
  ```

  For example, `/opt/uperf /opt/uperf`

  The configuration file must be saved as `/opt/SUNWhcts/etc/uperf_path.conf`

  Make sure the system configuration meets the `uperf` requirement. For detailed description for `uperf`, refer uperf website.
- If you are testing NIC FMA test, please make sure the Test Manager system (TM) must be able to be rsh as root.

# Certifying USB, Storage, Storage performance, CD/DVD, CPU or Memory, Audio, Tape Drive, Video, Performance Monitor and Storage FMA Devices

For certifying USB, storage, CD/DVD, CPU or memory, audio, tape drive and video devices, only the SUT is required. This section explains the hardware and the software requirements for certifying USB, storage, CD/DVD, CPU/Memory, audio, and video devices.

# Hardware Requirements

SUT should satisfy the following hardware requirements.

- Hardware floating point support.
- The SUT must have at least the following amount of free space.
  - Swap space is at least 1/8 of the physical memory size, minimum 512 Mbyte.
  - At least 4 Gbyte of free space on any Oracle Solaris system slice or a non reserved hard disk that is greater than 16 Gbyte.

    Type the following command to check free space.

    ```
    # df -h
    ```

A non reserved disk is a disk which does not contain any slice mounted to the `/`, `/usr`, `/opt`, `/var`, or `/export/home*` directory.

For USB device certification, the SUT must meet the following hardware requirements.

- For USB hard disk, solid state storage device, and multimedia card reader certification, the device to be certified must have at least 128 Mbyte of free space.
- For USB CD/DVD reader certification, a mixed-mode CD must be used. You can use the `make_mixed_mode_cd` utility under the `/opt/SUNWhcts/bin` directory to create a mixed-mode CD that can be used for the certification. See the Oracle HCTS man page for more information.
- For USB CD writer certification, a rewritable CD should be inserted in the drive under test. For USB DVD writer certification, any supported rewritable media should be inserted.
- For USB CD/DVD writer certification, a minimum of 600 Mbyte of free space is needed in the `/export/home` directory for each device to be certified.
- For performance monitor test, make sure the SUT has at least one non-reserved disk.
- For Storage FMA test, please make sure there are at least 2 storage controllers and 2 disks, where one disk is running Oracle Solaris OS under one storage controller which can NOT test against, and the other disk is under the other storage controller which is test against.

**Caution –** To certify storage devices, USB hard disk, and solid state storage, if the SUT contains more than one disk drive, any disk that does not have a slice mounted to `/`, `/usr`, `/opt`, `/var`, or `/export/home*` is formatted. All the data on such a disk is lost. During the test initialization process, any disk that is scheduled to be formatted is listed. The initialization process pauses for 60 seconds and prompts you to stop the certification if you do not want the disk to be formatted.

**Caution –** For CD/DVD writer certification and USB CD/DVD writer certification, the disk that is inserted in the writer is erased during testing and all the data on the disk is lost. Ensure that you use a disk that does not contain any data for this certification.

**Caution –** The USB web cam functional test takes pictures during testing. These pictures are packed in the Oracle HCTS result package for auditing. Adjust the web cam for moderate brightness and visibility.

# Software Requirements

SUT must have the following OS installed and running.


- "Oracle Solaris 10 OS or Oracle Solaris 11 OS" on page 21
- "Oracle HCTS" on page 21


## Oracle Solaris 10 OS or Oracle Solaris 11 OS

Any Oracle Solaris 10 release or Oracle Solaris 11 release can be used to run the Oracle HCTS 5.6 application. You need at least Oracle Solaris 10 version 6/06 to certify CD-RW or DVD-RW devices.

If your system is already running the Oracle Solaris 10 OS or the Oracle Solaris 11 OS, you might want to perform a fresh reinstall before you install Oracle HCTS.

For USB CD/DVD reader certification and USB CD/DVD writer certification, at least Oracle Solaris OS version 6/06 must be installed on the SUT. Use the latest Oracle Solaris release.

For the USB web cam certification, the latest release of the Oracle Solaris 11 OS must be installed on SUT.

## Oracle HCTS

Before you download the Oracle HCTS 5.6 archive file, create a download directory on the test system. When you are prompted for the download location, provide the name of this directory that you created.

You can download Oracle HCTS from the Downloads web page.

**Note –** Before invoking Oracle HCTS, ensure that `XWindows` is running on the test system.

If you are testing storage performance tuning tool, make sure the SUT has storage performance tool installed and meets the tool requirement (default storage performance tool is `vdbench`).

**Note –** Make sure vdbench is installed on the System Under Test (SUT) if the user wants to use it as a performance tool. Also, a configuration file must be generated and saved as /opt/SUNWhcts/etc/vdbench_path.conf. Make sure the system configuration meets the vdbench requirements. For detailed description for vdbench, refer vdbench website.

Before running Oracle HCTS performance tuning tool, the user has to provide three key files as input to the tool, they are: it:storage_per.conf, vdbench.cfg, and vdbench.rule. storage_per.conf and vdbench.rule must be stored in ${HCTS_HOME}/etc directory (${HCTS_HOME} is the HCTS installed home directory).

storage_per.conf — It is the main vdbench configuration file. It has the following four sections:

- perf_tool_argument – Defines the location of vdbench executable file.
- perf_tool_argument – This value cannot be NULL. This parameter defines the location of vdbench.cfg file for vdbench.
- driver_name – Provides the driver on which vdbench will run. It is an optional section.
- driver_parameter – Defines the driver name which needs to be tuned while Oracle HCTS Storage performance tuning tool is running. Oracle HCTS picks up all driver_parameter possible values and modifies the driver configuration file one by one, and then runs several instances of vdbench. The driver_parameter is an optional section, but if the user defines this parameter, then the driver_name parameter must also been defined.

vdbench.cfg — This configuration file stores the vdbench arguments. The user has to define each vdbench argument in this file. Oracle HCTS provides a macro [DISK] for these parameters, which the user can use to define the name of the raw disk, tape, or file system for the argument lun in the parameter file. This macro will be replaced by the real disk, tape, or file system name which the user selected from the UI when vdbench was invoked.

vdbench.rule — This is a CSV (comma separated) file, which is used to store column names for vdbench. This file is used to investigate storage performance.

Oracle HCTS provides examples of storage_per.conf,vdbench.cfg, and vdbench.rule in ${HCTS_HOME}/etc directory (${HCTS_HOME} is the HCTS installed home directory).

# Certifying FCoE on Converged Network Adapter (CNA)

To certify FCoE on Converged Network Adapter (CNA), both storage and network certification test results are required for HCL submission. For more information on certifying FCoE on CNA, see the hardware and software requirements of certifying storage and network devices. After completing the Network and Storage controller certification testing, please complete the submission form, choosing Networking for 'Type of', and Converged Network Adapter for 'Technology Type', and enter both network and storage driver names.

◆ ◆ ◆ CHAPTER 3

# Installing Oracle HCTS

Before installing Oracle HCTS, ensure that the Oracle Solaris 10 OS or Oracle Solaris 11 OS is installed and running. You might need to do a few configurations when installing Oracle Solaris 10 OS or the Oracle Solaris 11 OS. This chapter explains the installation and configuration of OS and Oracle HCTS for certifying various types of devices.

This chapter covers the following sections.


- "Configuring the Oracle Solaris 10 OS Installation" on page 25
- "Configuring the Oracle Solaris 11 OS Installation" on page 26
- "Installing the Oracle HCTS Application" on page 26
- "Installing the Oracle HCTS InfiniBand HCA Application" on page 28
- "Installing the Oracle HCTS SCSI Test For External Storage Certification" on page 30
- "Installing the Oracle HCTS FMA Test Packages" on page 31
- "Uninstalling Oracle HCTS" on page 33


## Configuring the Oracle Solaris 10 OS Installation

For Oracle Solaris 10 installation details, see the Oracle Solaris 10 Release and Installation Collection web page.

While installing the Oracle Solaris 10 OS, partition the disk to satisfy the requirements mentioned in Chapter 2, "System Requirements."

To verify whether you are running the Oracle Solaris 10 OS or the Oracle Solaris 11 OS, type the following command.

```
# cat /etc/release
```

While installing the Oracle Solaris 10 OS, you must make the following customization in the GUI prompt.

- Select None for Name Service.

- Select Initial Install for Upgrade or Initial Install.
- Select Custom Install and then select Developer group or above. You must perform at least a Developer group installation. See the Oracle Solaris 10 Package List for a list of what you get with different types of installations.

You might have to backup your test systems and reinstall the Oracle Solaris OS before you install and run Oracle HCTS.

# Configuring the Oracle Solaris 11 OS Installation

While installing the Oracle Solaris 11 OS, partition the disk to satisfy the requirements mentioned in Chapter 2, "System Requirements."

For the Oracle Solaris 11 OS installation details, see the Oracle Solaris 11 OS Installation Guide.

# Installing the Oracle HCTS Application

For certifying system, network, InfiniBand, WiFi, network performance and serial I/O devices, install Oracle HCTS on both TM and SUT.

For certifying USB, storage, CD/DVD, audio, and video devices or testing CPU/Memory, storage performance, Suspend/Resume, install Oracle HCTS on SUT.

For certifying External Storage devices, install Oracle HCTS on four machines. For more information, see Chapter 5, "External Storage Certification."

For Solaris 10 OS, the Oracle HCTS 5.6 archive is a tar file from which you need to extract the contents.

For Oracle Solaris 11 OS, there are two methods to install Oracle HCTS 5.6. The first is similar to Solaris 10 OS where Oracle HCTS 5.6 archive is a tar file from which you need to extract the contents. The second one is installing Oracle HCTS from the Image Packaging System (IPS) repository as shown in "To Install from IPS Repository" on page 28.

This section describes the following topics.


- "To Extract the Oracle HCTS File Content" on page 27
- "To Install Oracle HCTS" on page 27
- "To Install from IPS Repository" on page 28

## ▼ To Extract the Oracle HCTS File Content

- **To extract the Oracle HCTS contents, type the following command.**

  ```
  # gzip -cd hcts.5.6.tar.gz | tar xvf -
  ```

  - **If you are working on the SPARC platform the package is `hcts.5.6-sparc.tar.gz`. To extract the contents of this package, type the following command.**

    ```
    # gzip -cd hcts.5.6-sparc.tar.gz | tar xvf -
    ```

    The contents are extracted to a directory called `hcts.5.6` or `hcts.5.6-sparc`, which is placed in the directory where you downloaded Oracle HCTS. This `hcts.5.6` or `hcts.5.6-sparc` directory contains the following files.

    - Oracle HCTS 5.6 README
    - Oracle HCTS 5.6 Release notes
    - Oracle HCTS 5.6 ThirdPartyLicenseReadMe
    - `SUNWhcts` package

---

**Note –** Be sure to read the Oracle HCTS 5.6 README and Oracle HCTS 5.6 Release notes in the `/hcts_extract_dir/hcts.5.6` directory before you install Oracle HCTS.

Installation verifies that no previous version of Oracle HCTS exists on your system. If Oracle HCTS is already installed on the system, uninstall the existing version using procedures mentioned in "Uninstalling Oracle HCTS" on page 33

---

## ▼ To Install Oracle HCTS

1. **Log in as a root by using the `su` command.**

   ```
   # su
   ```

2. **To add the Oracle HCTS package, type the following command.**

   ```
   # /usr/sbin/pkgadd -d . SUNWhcts
   ```

   Watch for any questions or error messages and respond accordingly. The Oracle HCTS installation performs the following functions.

   - Verifies that no version of Oracle HCTS is already installed on the system.
   - Installs the package `SUNWhcts` in the `/opt` directory.
   - Installs the `x11perf` binary file in the `/usr/X11/demo/` directory.
   - Installs the `x11perf.1x` man page file in the `/usr/X11/share/man/man1` directory for the video test case.
   - Creates a `/docs` directory in the `/opt/SUNWhcts` directory.

### ▼ To Install from IPS Repository

The steps to use the HCTS ISO file for installing `SUNWhcts` package are as follows. Note that `platformD` represents the platform of your system (for example, SPARC or X64) and `versionN` represents the HCTS version number.

1. **Log in as a root by using the `su` command.**

   ```
   # su
   ```

2. **Mount the ISO image as a filesystem by using any one of the following command.**

   ```
   # mount -F hsfs <full_path_to>/hcts-platformD-versionN.iso /mnt
   ```

   or

   ```
   # mount -F hsfs -o ro 'lofiadm -a <full_path_to>/hcts-platformD-versionN.iso' /mnt
   ```

3. **Add an additional origin to the existing Solaris publisher.**

   ```
   # pkg set-publisher -g file:///mnt/repo hcts
   ```

4. **Perform the installation of HCTS packages.**

   ```
   # pkg install pkg://hcts/diagnostic/SUNWhcts
   ```

5. **Before starting HCTS, ensure to run these steps without exception.**

   ```
   # umount -f  /mnt
   # /opt/SUNWhcts/bin/reconfigure
   ```

# Installing the Oracle HCTS InfiniBand HCA Application

This section describes the following topics.


- "Extracting the Oracle HCTS InfiniBand HCA File Content" on page 28
- "Installing the `SUNWstc-infiniband-ibtf` Package" on page 29
- "Installing the `SUNWstc-dtet` Package" on page 29


To certify an InfiniBand Host Channel Adapter (HCA), you must install the Oracle HCTS InfiniBand HCA application and the Oracle HCTS application on the TM and SUT systems.

## Extracting the Oracle HCTS InfiniBand HCA File Content

The Oracle HCTS 5.6 IB HCA archive is a tar file from which you need to extract the contents. The name of the downloaded file is `hcts.5.6.ib-${ARCH}.tar.gz`. The `${ARCH}` value represents the processor type, that is SPARC or `i386`. For example, the IB HCA package for x86 platform is named as `hcts.5.6.ib-i386.tar.gz`.

To extract the Oracle HCTS InfiniBand HCA file content, type the following command on each machine.

```
# gzip -cd hcts.5.6.ib-$(ARCH).tar.gz | tar xvf -
```

The contents are extracted to a directory called `hcts.5.6.ib-${ARCH}`, which is placed in the directory where you have downloaded the Oracle HCTS InfiniBand HCA.

The `hcts.5.6.ib-${ARCH}` directory contains the following files.

- `hcts.5.6.ib.README`
- `SUNWstc-infiniband-ibtf` package
- `SUNWstc-dtet` package

# Installing the SUNWstc-infiniband-ibtf Package

Be sure to read the `hcts.5.6.ib.README` in the `/hcts_extract_dir/hcts.5.6.ib-${ARCH}` directory before you install the `SUNWstc-infiniband-ibtf` package. Installation verifies that no previous version of the `SUNWstc-infiniband-ibtf` exists on your system. If `SUNWstc-infiniband-ibtf` is already installed on the system, uninstall the existing version.

On each system, perform the following steps to install the `SUNWstc-infiniband-ibtf` package.

1. Log in as a root by using the `su` command.

   ```
   # su
   ```
2. Add the `SUNWstc-infiniband-ibtf` package.

   ```
   # /usr/sbin/pkgadd -d . SUNWstc-infiniband-ibtf
   ```

Watch for any questions or error messages from the installation and respond accordingly. The `SUNWstc-infiniband-ibtf` installation performs the following actions.

- Verifies that no version of the `SUNWstc-infiniband-ibtf` is already installed on the system.
- Installs the package `SUNWstc-infiniband-ibtf` into the `/opt` directory.

# Installing the SUNWstc-dtet Package

Be sure to read `hcts.5.6.ib.README` in the `/hcts_extract_dir/hcts.5.6.ib-${ARCH}` directory before you install the `SUNWstc-dtet` package. Installation verifies that no previous version of the `SUNWstc-dtet` is on your system. If `SUNWstc-dtet` is already installed on this system, uninstall the existing version manually.

On each system, perform the following steps to install the `SUNWstc-dtet` package.

1. Log in as a root by using the `su` command.

   ```
   # su
   ```

2. Add the SUNWstc-dtet package.

```
# /usr/sbin/pkgadd -d . SUNWstc-dtet
```

Watch for any questions or error messages from the installation and respond accordingly. The SUNWstc-dtet installation performs the following actions.

- Verifies that no version of the SUNWstc-dtet is already installed on the system.
- Installs the package SUNWstc-dtet into the /opt directory.

# Installing the Oracle HCTS SCSI Test For External Storage Certification

You should install the Oracle HCTS SCSI test package and the Oracle HCTS application on both the TM and the SUT systems to certify External Storage. This section describes the following procedures.


- "Extracting the Oracle HCTS SCSI Test File Content" on page 30
- "Installing the SUNWtscsi Package" on page 30


## Extracting the Oracle HCTS SCSI Test File Content

The Oracle HCTS 5.6 SCSI test archive is a tar file from which you need to extract the contents. The name of the downloaded file is hcts.5.6.tscsi-${ARCH}.tar.gz. The ${ARCH} value represents the processor type, that is SPARC or x86. For example, the SCSI test package for x86 platform is named as hcts.5.6.tscsi-x86.tar.gz.

To extract the Oracle HCTS SCSI test file content, type the following command on each machine.

```
# gzip -cd hcts.5.6.tscsi-${ARCH}.tar.gz | tar xvf -
```

The contents are extracted to a directory called SUNWtscsi, which is placed in the directory where you have downloaded the Oracle HCTS SCSI test package. The SUNWtscsi directory contains the SUNWtscsi package.

## Installing the SUNWtscsi Package

Installing the SUNWtscsi package verifies that no previous version of the SUNWtscsi package exists on your system. If SUNWtscsi is already installed on the system, uninstall the existing version.

On each system, perform the following steps to install the SUNWtscsi package.

1. Log in as a root by using the su command.

   ```
   # su
   ```

2. Add the SUNWtscsi package.

   ```
   # /usr/sbin/pkgadd -d . SUNWtscsi
   ```

Check for any questions or error messages from the installation and respond accordingly. The SUNWtscsi installation performs the following actions.

- Verifies that no version of the SUNWtscsi is already installed on the system.
- Installs the package SUNWtscsi into the /opt directory.

# Installing the Oracle HCTS FMA Test Packages

You should install the Oracle HCTS FMA test packages on the SUT system, and the Oracle HCTS application on both the TM and the SUT systems to test FMA. The Oracle HCTS FMA test packages include SUNWstc-os-ldfma, SUNWstc-tetlite and SUNWstc-netperf2 packages. The SUNWstc-os-ldfma and SUNWstc-tetlite packages are for storage or NIC FMA test, and the SUNWstc-netperf2 package is for NIC FMA test. This section describes the following topics:


- " Extracting the Oracle HCTS FMA Test File Content" on page 31
- "Installing the SUNWstc-os-ldfma Package " on page 32
- "Installing the SUNWstc-tetlite Package " on page 32
- "Installing the SUNWstc-netperf2 Package" on page 33


## Extracting the Oracle HCTS FMA Test File Content

The Oracle HCTS 5.6 FMA test archive is a tar file from which you need to extract the contents. The name of the downloaded file is hcts.5.6.fma-${ARCH}.tar.gz. The ${ARCH} value represents the processor type, that is, SPARC or x86. For example, the FMA test package for x86 platform is named as hcts.5.6.fma-x86.tar.gz.

To extract the contents of Oracle HCTS FMA test file, type the following command on the SUT system:

```
# gzip -cd hcts.5.6.fma-${ARCH}.tar.gz | tar xvf -
```

The contents are extracted to a directory called hcts.5.6.fma-${ARCH}, which is placed in the directory where you have downloaded the Oracle HCTS FMA test package.

The hcts.5.6.fma-${ARCH} directory contains the following files.

- SUNWstc-os-ldfma package
- SUNWstc-tetlite package

- SUNWstc-netperf2 package

# Installing the SUNWstc-os-ldfma Package

Installing the SUNWstc-os-ldfma package verifies that no previous version of the SUNWstc-os-ldfma package exists on your system. If SUNWstc-os-ldfma package is already installed on the system, uninstall the existing version.

On each system, perform the following steps to install the SUNWstc-os-ldfma package.

1. Log in as a root. Type:

   ```
   # su
   ```
2. Add the SUNWstc-os-ldfma package. Type:

   ```
   # /usr/sbin/pkgadd -d . SUNWstc-os-ldfma
   ```

   The SUNWstc-os-ldfma package is installed in the /opt directory.

Check for any questions or error messages from the installation and respond accordingly. The SUNWstc-os-ldfma installation performs the following actions.

- Verifies that no version of the SUNWstc-os-ldfma is already installed on the system.
- Installs the package SUNWstc-os-ldfma into the /opt directory.

# Installing the SUNWstc-tetlite Package

Installing the SUNWstc-tetlite package verifies that no previous version of the SUNWstc-tetlite package exists on your system. If SUNWstc-tetlite package is already installed on the system, uninstall the existing version.

On each system, perform the following steps to install the SUNWstc-tetlite package.

1. Log in as a root. Type:

   ```
   # su
   ```
2. Add the SUNWstc-tetlite package. Type:

   ```
   # /usr/sbin/pkgadd -d . SUNWstc-tetlite
   ```

   The SUNWstc-tetlite package is installed in the /opt directory.

Check for any questions or error messages from the installation and respond accordingly. The SUNWstc-tetlite installation performs the following actions.

- Verifies that no version of the SUNWstc-tetlite is already installed on the system.
- Installs the package SUNWstc-tetlite into the /opt directory.

## Installing the SUNWstc-netperf2 Package

Installing the `SUNWstc-netperf2` package verifies that no previous version of the `SUNWstc-netperf2` package exists on your system. If `SUNWstc-netperf2` package is already installed on the system, uninstall the existing version.

On each system, perform the following steps to install the `SUNWstc-netperf2` package.

1. Log in as a root. Type:

   ```
   # su
   ```
2. Add the `SUNWstc-netperf2` package. Type:

   ```
   # /usr/sbin/pkgadd -d . SUNWstc-netperf2
   ```

   The `SUNWstc-netperf2` package is installed in the `/opt` directory.

Check for any questions or error messages from the installation and respond accordingly. The `SUNWstc-netperf2` installation performs the following actions.

- Verifies that no version of the `SUNWstc-netperf2` is already installed on the system.
- Installs the package `SUNWstc-netperf2` into the `/opt` directory.

# Uninstalling Oracle HCTS

Before you put the test systems back into production use, you might want to reconfigure your test system to its original configuration. If you choose not to reinstall your test systems, you must uninstall Oracle HCTS.

Perform the following steps to uninstall Oracle HCTS from your system.

1. Log in as a root by using the `su` command.

   ```
   # su
   ```
2. If Oracle HCTS was installed by IPS repository, remove the `SUNWhcts` package by typing the following command.

   ```
   # /usr/bin/pkg uninstall SUNWhcts
   ```

   If Oracle HCTS was installed by tar file, remove the `SUNWhcts` package by typing the following command.

   ```
   # /usr/sbin/pkgrm SUNWhcts
   ```

◆ ◆ ◆ CHAPTER 4

# Working With Oracle HCTS

For certifying your systems and hardware, you can use the Oracle HCTS graphical user interface (GUI) or the Oracle HCTS command line interface (CLI). This chapter describes working with the Oracle HCTS GUI and CLI.

---

**Note –** There is a slight difference in the GUI while certifying the virtual platforms. To learn about the Oracle HCTS GUI changes for the virtual platform certification, see Chapter 7, "Certifying the Virtual Platform."

---

This chapter discusses the following topics.


- "Running the Oracle HCTS Application" on page 35
- "Using the Oracle HCTS GUI" on page 36
- "Using Oracle HCTS CLI" on page 45
- "Preference" on page 49


## Running the Oracle HCTS Application

---

**Caution –** For the system certification, if the SUT contains more than one disk drive, any disk that does not have any slice mounted to `/`, `/usr`, `/opt`, `/var`, or `/export/home*` is formatted. All data on such a disk is lost. During the test initialization process, any disk that is scheduled to be formatted is listed. The initialization process pauses for 60 seconds and prompts you to stop the certification if you do not want the disk to be formatted.

---

To system certify the SUT, if the SUT has a CD or DVD drive, insert a CD or DVD in the drive.

If you are certifying a CD-ROM or DVD-ROM drive for compatibility with the Oracle Solaris OS, insert a mixed-mode CD in the test system. Use the `make_mixed_mode_cd` utility to create a mixed-mode CD.

If you are testing a CD-RW or DVD-RW drive for compatibility with the Oracle Solaris OS, insert a CD-RW, DVD-RW, DVD-RW, or DVD-RAM disk in the drive of the test system.

If you are certifying or testing a USB device, make sure you connect the device to the SUT and power it on according to the instructions provided in the device's user guide.

If you are certifying the USB CD/DVD reader, insert a mixed-mode CD before you start certification. You can use the `make_mixed_mode_cd` utility to create a mixed-mode CD. See the Oracle HCTS 5.6 man page for more information.

If you are certifying the USB CD/DVD writer, prepare all types of rewritable media supported by the device, certify each of them and then submit your results.

# Using the Oracle HCTS GUI

To start the Oracle HCTS GUI, type the following Oracle HCTS command.

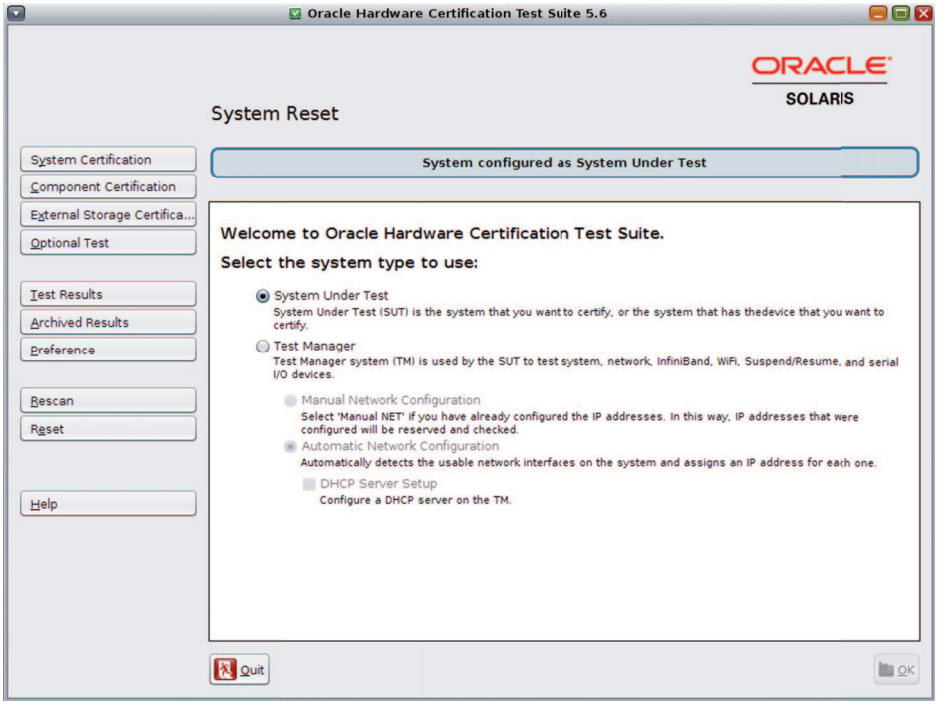
```
# /usr/bin/hcts
```

On the TM system, if you are prompted to select a mode for the machine, click the Test Manager button. If you want Oracle HCTS to automatically prepare the TM network environment, click the Automatic Network Configuration. Otherwise click the Manual Network Configuration.

If you want the TM machine to behave as a DHCP server when doing certification, click DHCP Server Setup checkbox after selecting the Automatic Network Configuration. Click the OK button.

On the SUT system, if you are prompted to select a mode for the machine, click System Under Test then click the OK button.

**FIGURE 4–1** Reset Oracle HCTS

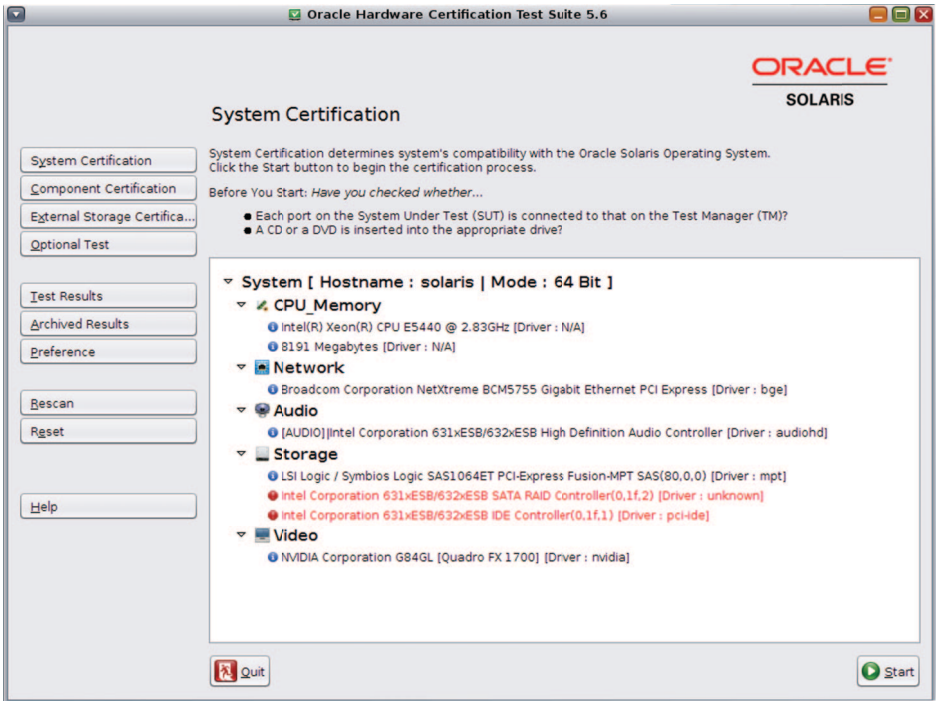

Oracle Hardware Certification Test Suite 5.6
ORACLE
SOLARIS
System Reset
System Certification
Component Certification
External Storage Certifica...
Optional Test
Test Results
Archived Results
Preference
Rescan
Reset
Help
System configured as System Under Test
Welcome to Oracle Hardware Certification Test Suite.
Select the system type to use:
System Under Test
System Under Test (SUT) is the system that you want to certify, or the system that has thedevice that you want to certify.
Test Manager
Test Manager system (TM) is used by the SUT to test system, network, InfiniBand, WiFi, Suspend/Resume, and serial I/O devices.
Manual Network Configuration
Select 'Manual NET' if you have already configured the IP addresses. In this way, IP addresses that were configured will be reserved and checked.
Automatic Network Configuration
Automatically detects the usable network interfaces on the system and assigns an IP address for each one.
DHCP Server Setup
Configure a DHCP server on the TM.
Quit
OK

# System Certification

To certify a system, click the System Certification button and then click the Start button. By performing this operation, your system will get certified as a whole.

The System Certification page is shown in the following figure.

**FIGURE 4–2** System Certification

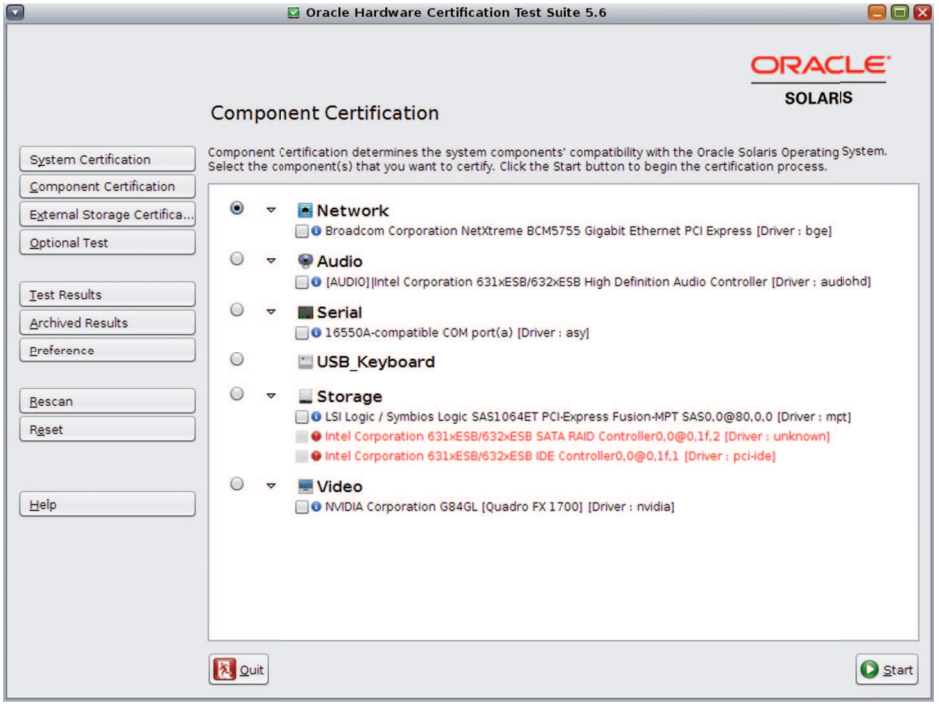

Oracle Hardware Certification Test Suite 5.6
ORACLE
SOLARIS
System Certification
System Certification
Component Certification
External Storage Certifica...
Optional Test
Test Results
Archived Results
Preference
Rescan
Reset
Help
System Certification determines system's compatibility with the Oracle Solaris Operating System.
Click the Start button to begin the certification process.
Before You Start: Have you checked whether...
Each port on the System Under Test (SUT) is connected to that on the Test Manager (TM)?
A CD or a DVD is inserted into the appropriate drive?
System [ Hostname : solaris | Mode : 64 Bit ]
CPU_Memory
Intel(R) Xeon(R) CPU E5440 @ 2.83GHz [Driver : N/A]
8191 Megabytes [Driver : N/A]
Network
Broadcom Corporation NetXtreme BCM5755 Gigabit Ethernet PCI Express [Driver : bge]
Audio
[AUDIO]Intel Corporation 631xESB/632xESB High Definition Audio Controller [Driver : audiohd]
Storage
LSI Logic / Symbios Logic SAS1064ET PCI-Express Fusion-MPT SAS(80,0,0) [Driver : mpt]
Intel Corporation 631xESB/632xESB SATA RAID Controller(0,1f,2) [Driver : unknown]
Intel Corporation 631xESB/632xESB IDE Controller(0,1f,1) [Driver : pci-ide]
Video
NVIDIA Corporation G84GL [Quadro FX 1700] [Driver : nvidia]
Quit
Start

# Component Certification

To run the Component Certification test for components such as audio, CD/DVD RW, CD/DVD ROM, network, serial, storage, InfiniBand, WiFi, USB CD/DVD ROM, USB CD/DVD RW, USB hard disk and solid-state storage device, USB keyboard tape drive and video, click the Component Certification button. Select the component you want to certify and click the Start button. The component that you have selected gets certified.

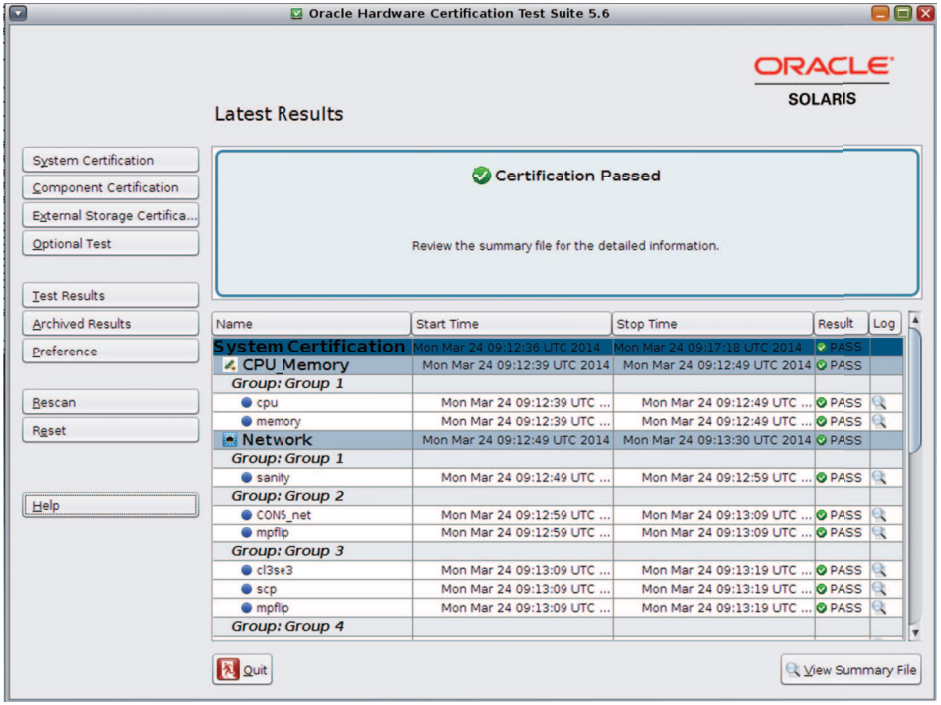
The Component Certification page is shown in the following figure.

**FIGURE 4–3** Component Certification


Oracle Hardware Certification Test Suite 5.6
ORACLE
SOLARIS
Component Certification
System Certification
Component Certification
External Storage Certifica...
Optional Test
Test Results
Archived Results
Preference
Rescan
Reset
Help
Component Certification determines the system components' compatibility with the Oracle Solaris Operating System.
Select the component(s) that you want to certify. Click the Start button to begin the certification process.
Network
Broadcom Corporation NetXtreme BCM5755 Gigabit Ethernet PCI Express [Driver : bge]
Audio
[AUDIO]|Intel Corporation 631xESB/632xESB High Definition Audio Controller [Driver : audiohd]
Serial
16550A-compatible COM port(a) [Driver : asy]
USB_Keyboard
Storage
LSI Logic / Symbios Logic SAS1064ET PCI-Express Fusion-MPT SAS0,0@80,0,0 [Driver : mpt]
Intel Corporation 631xESB/632xESB SATA RAID Controller0,0@0,1f,2 [Driver : unknown]
Intel Corporation 631xESB/632xESB IDE Controller0,0@0,1f,1 [Driver : pci-ide]
Video
NVIDIA Corporation G84GL [Quadro FX 1700] [Driver : nvidia]
Quit
Start

When testing is complete, click the Test Results button.

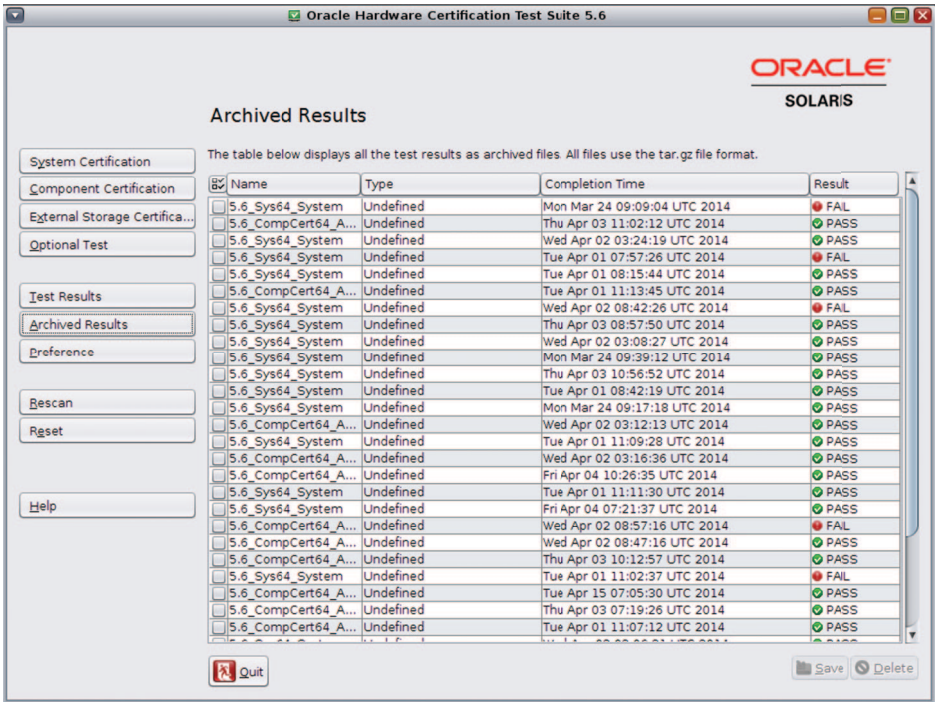
**FIGURE 4–4** Test Results




Click the icon in the Log column to view the detailed results for a test. Click the View Summary File button to view the summary of the results of all the tests listed in the table.

To access the results archive file that you need to submit to the HCL if your certification testing passed, click the Archived Results button.

**FIGURE 4–5** Certification Logs


Oracle Hardware Certification Test Suite 5.6
ORACLE
SOLARIS
Archived Results
System Certification
Component Certification
External Storage Certifica...
Optional Test
Test Results
Archived Results
Preference
Rescan
Reset
Help
The table below displays all the test results as archived files. All files use the tar.gz file format.
Name
Type
Completion Time
Result
5.6_Sys64_System Undefined Mon Mar 24 09:09:04 UTC 2014 FAIL
5.6_CompCert64_A... Undefined Thu Apr 03 11:02:12 UTC 2014 PASS
5.6_Sys64_System Undefined Wed Apr 02 03:24:19 UTC 2014 PASS
5.6_Sys64_System Undefined Tue Apr 01 07:57:26 UTC 2014 FAIL
5.6_Sys64_System Undefined Tue Apr 01 08:15:44 UTC 2014 PASS
5.6_CompCert64_A... Undefined Tue Apr 01 11:13:45 UTC 2014 PASS
5.6_Sys64_System Undefined Wed Apr 02 08:42:26 UTC 2014 FAIL
5.6_Sys64_System Undefined Thu Apr 03 08:57:50 UTC 2014 PASS
5.6_Sys64_System Undefined Wed Apr 02 03:08:27 UTC 2014 PASS
5.6_Sys64_System Undefined Mon Mar 24 09:39:12 UTC 2014 PASS
5.6_Sys64_System Undefined Thu Apr 03 10:56:52 UTC 2014 PASS
5.6_Sys64_System Undefined Tue Apr 01 08:42:19 UTC 2014 PASS
5.6_Sys64_System Undefined Mon Mar 24 09:17:18 UTC 2014 PASS
5.6_CompCert64_A... Undefined Wed Apr 02 03:12:13 UTC 2014 PASS
5.6_Sys64_System Undefined Tue Apr 01 11:09:28 UTC 2014 PASS
5.6_CompCert64_A... Undefined Wed Apr 02 03:16:36 UTC 2014 PASS
5.6_CompCert64_A... Undefined Fri Apr 04 10:26:35 UTC 2014 PASS
5.6_Sys64_System Undefined Tue Apr 01 11:11:30 UTC 2014 PASS
5.6_Sys64_System Undefined Fri Apr 04 07:21:37 UTC 2014 PASS
5.6_CompCert64_A... Undefined Wed Apr 02 08:57:16 UTC 2014 FAIL
5.6_CompCert64_A... Undefined Wed Apr 02 08:47:16 UTC 2014 PASS
5.6_CompCert64_A... Undefined Thu Apr 03 10:12:57 UTC 2014 PASS
5.6_Sys64_System Undefined Tue Apr 01 11:02:37 UTC 2014 FAIL
5.6_CompCert64_A... Undefined Tue Apr 15 07:05:30 UTC 2014 PASS
5.6_CompCert64_A... Undefined Thu Apr 03 07:19:26 UTC 2014 PASS
5.6_CompCert64_A... Undefined Tue Apr 01 11:07:12 UTC 2014 PASS
Quit
Save
Delete

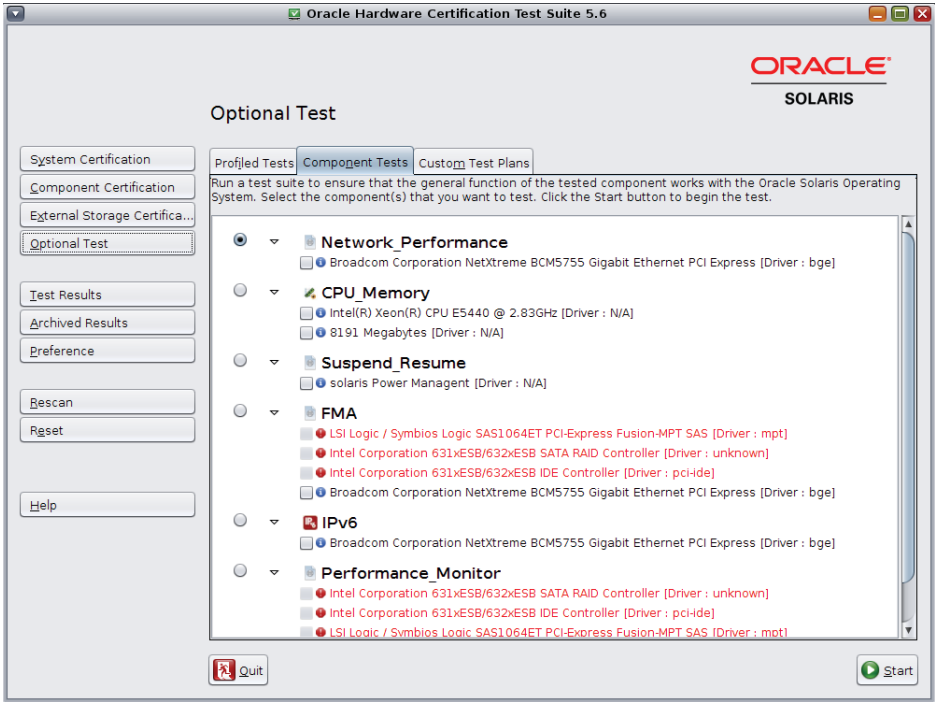
Select the files that you want to operate on by selecting the checkboxes at the left-most column, then click Save to save the files to another location or Delete to remove the files.

To select all the files, click the left button displaying two check marks in the header row. To de-select all files, click the left button displaying no check marks in the header row.

# Component Tests

To test a component but not certify the component, click the Optional Test button and then click the Component Tests tab. Select the component test that you want to run and then click the Start button.

**FIGURE 4–6** Component Tests


Oracle Hardware Certification Test Suite 5.6
ORACLE
SOLARIS
Optional Test
System Certification
Component Certification
External Storage Certifica...
Optional Test
Test Results
Archived Results
Preference
Rescan
Reset
Help
Profiled Tests
Component Tests
Custom Test Plans
Run a test suite to ensure that the general function of the tested component works with the Oracle Solaris Operating System. Select the component(s) that you want to test. Click the Start button to begin the test.
Network_Performance
Broadcom Corporation NetXtreme BCM5755 Gigabit Ethernet PCI Express [Driver : bge]
CPU_Memory
Intel(R) Xeon(R) CPU E5440 @ 2.83GHz [Driver : N/A]
8191 Megabytes [Driver : N/A]
Suspend_Resume
solaris Power Managent [Driver : N/A]
FMA
LSI Logic / Symbios Logic SAS1064ET PCI-Express Fusion-MPT SAS [Driver : mpt]
Intel Corporation 631xESB/632xESB SATA RAID Controller [Driver : unknown]
Intel Corporation 631xESB/632xESB IDE Controller [Driver : pci-ide]
Broadcom Corporation NetXtreme BCM5755 Gigabit Ethernet PCI Express [Driver : bge]
IPv6
Broadcom Corporation NetXtreme BCM5755 Gigabit Ethernet PCI Express [Driver : bge]
Performance_Monitor
Intel Corporation 631xESB/632xESB SATA RAID Controller [Driver : unknown]
Intel Corporation 631xESB/632xESB IDE Controller [Driver : pci-ide]
LSI Logic / Symbios Logic SAS1064ET PCI-Express Fusion-MPT SAS [Driver : mpt]
Quit
Start

# Custom Test Plan

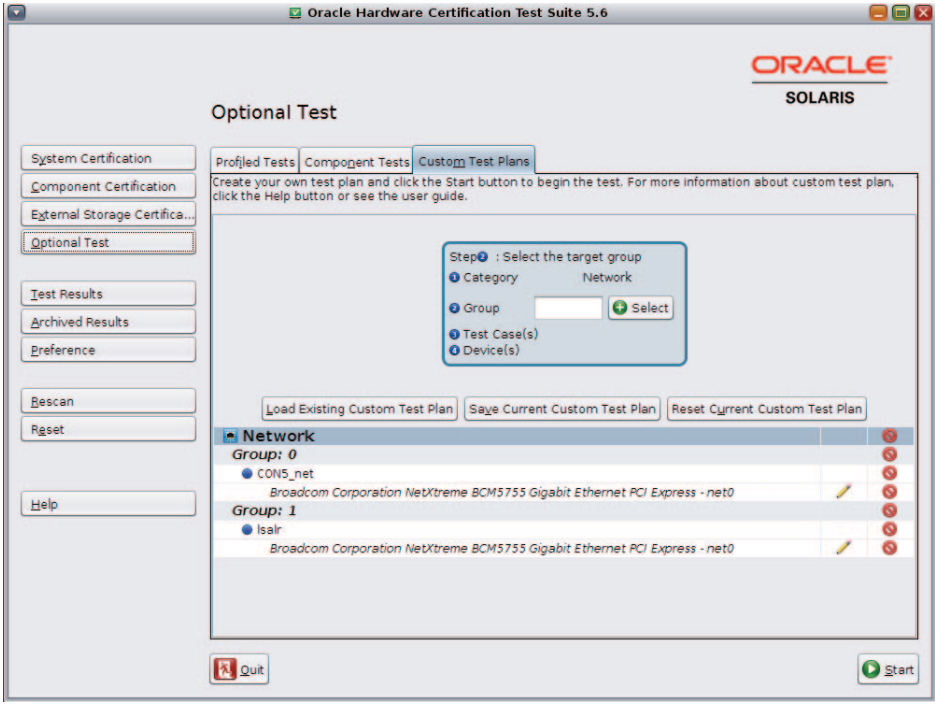
To run the other tests, click the Optional Test button and then click the Custom Test Plan tab. Select the test that you want to run from the drop-down list . Click the Start button.

The Custom Test Plan feature provides an interface for creating test plans which may provide additional failure diagnostics information. Custom Test Plan results are not valid for HCL submission.

Tunable Options permit the customization of various predefined test arguments. By modifying the values of these options, you can control the exposed runtime attributes for the test case operating on the associated device.

For more information, see the Custom Test Plan online help page under Certification Center → Custom Test Plan.

**FIGURE 4–7** Custom Test Plan

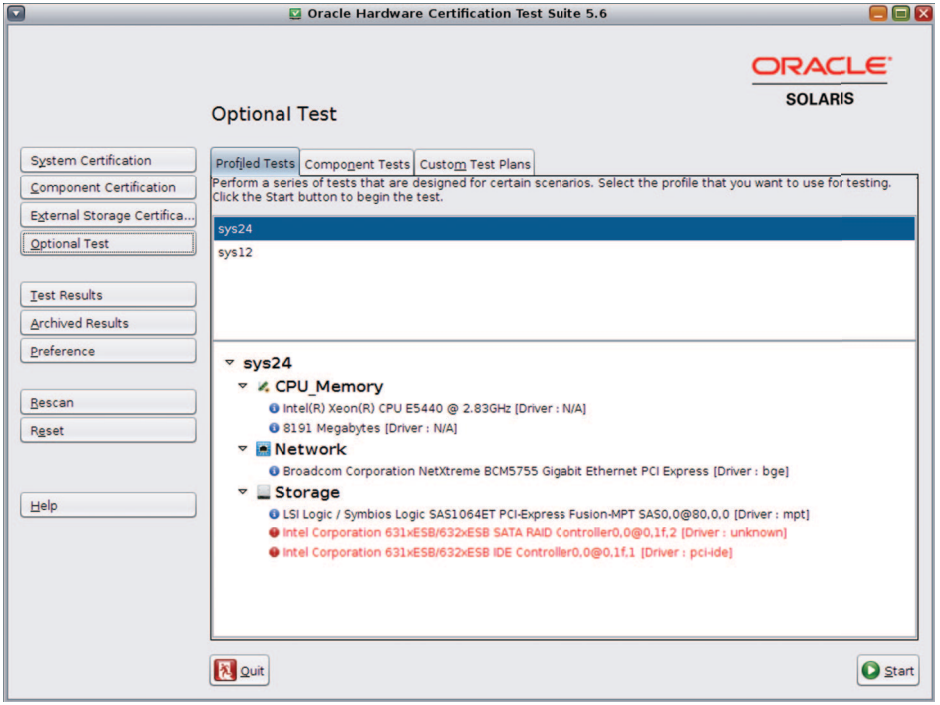



# Profiled Tests

Oracle HCTS application enables you to perform testing based on the profiles having different test coverage and stress levels. There are currently two profiles that are previously implemented in the system. You can select any of the following system profiles.

- `sys12`: A system test that runs for about 12 hours.
- `sys24`: A system test that runs for 24 hours.

**FIGURE 4–8** Profiled Tests




## ▼ Procedure to Perform the Profile Tests

**Before You Begin**

Before performing the profile tests, you must ensure that the following system requirements are satisfied.

- Hardware Requirements: Two systems are required.
  - System Under Test (SUT): The SUT is the system that is to be certified or that has the component that needs to be certified.
  - Test Manager (TM): The TM is the system that is already certified as Oracle Solaris OS compatible.

  To learn more about the SUT and TM, click the Help button in the GUI or see "Configuring Test Machines to Run Oracle HCTS" on page 12.
- Software Requirements: Oracle Solaris 10 OS or the Oracle Solaris 11 OS.

- **Configure the network and storage environment as required for the system certification.**

  See "System Certification" on page 37 to know how to configure your system for the Oracle HCTS system certification.

  - **GUI Mode:**

    If you are using the GUI mode, perform the following steps.

    - Click the Optional Test button in the main window.
    - Click the Profile Test tab.
    - Select the profile that you want to execute.
    - Click the Start button.

  - **CLI Mode:**

    In the CLI mode, type the following command in the terminal.

    ```
    # hctscli test-profile sys12 | sys24
    ```

# Using Oracle HCTS CLI

There are two commands in the Oracle HCTS CLI environment listed as follows.

- `hctscli`: This command is used to certify the system and component in the CLI mode.
- `hctsclid`: This command is used to create and run the custom test plan in the CLI mode.

## Certifying Systems and Components Using CLI

For certifying systems and components, you need to use the `hctscli` command. As described in the previous chapters, you need to use TM and SUT for certifying the system, network, InfiniBand, WiFi, and serial I/O devices.

To start the Oracle HCTS for setting up the systems, certifying systems, and components, use the `hctscli` command. See the `hctscli(1M)` man page for more information.

To set up the TM system, type the following command.

```
# /usr/bin/hctscli setup-tm
```

To certify the SUT as a system, type the following command.

```
# /usr/bin/hctscli certify System
```

To list certifiable network devices of the SUT, type the following command.

```
# /usr/bin/hctscli list-device Network
```

To certify the network of the SUT using the IPv4 protocol, type the following command.

```
# /usr/bin/hctscli certify [ -d device_id_from_the_list-device_output] Network
```

If no device is specified for the certify network command, then all network devices are tested at the same time.

To list the serial devices of the SUT, type the following command.

```
# /usr/bin/hctscli list-device Serial
```

To certify the serial I/O component of the SUT, type the following command.

```
# /usr/bin/hctscli certify Serial
```

If no device is specified for the `certify Serial` command, then all serial devices are tested one by one.

---

**Note –** After you complete all testing, uninstall Oracle HCTS. Before you put the test systems back into production use, you might want to reinstall your test system to its original configuration.

---

To run the storage certification test suite, type the following command.

```
# /usr/bin/hctscli certify Storage
```

If no device is specified for the `certify Storage` command, then all storage devices are certified at the same time.

For more information on the names of component certification test suites that you can run and more examples, see the man pages.

---

**Note –** After you complete running all the tests, uninstall Oracle HCTS. Before you put the test systems back into production use, you might want to reinstall your test system to its original configuration.

---

# Creating the Custom Test Plan Using CLI

To create and run the custom test plan in the Oracle HCTS CLI, use the `hctsclid` command. Refer `hctsclid.1m` man page for more information.

**EXAMPLE 4–1** Creating a Custom Test Plan

To list all the available test categories under the Custom Test Plan, type the following command.

```
sut# hctsclid list-category

1: USB_Keyboard
2: CPU
3: Video
4: IPv6
5: Memory
6: Audio
7: CD-RW_DVD-RW
8: Storage
9: Network
```

To set the test category, type the following command.

```
sut# hctsclid set-category Storage
Category Storage is added.
```

To add a new group, type the following command.

```
sut# hctsclid add-group 1
Group 1 added to Custom Test Plan.
```

To list all the available test cases for the selected category, type the following command.

```
sut# hctsclid list-testcase Storage

1: bonnie
2: misabuf
3: fs_stress
4: dd
5: mode_sense
6: mpflip
```

To list all the devices supported by the bonnie test, type the following command.

```
sut# hctsclid list-device bonnie
Test Case Device List for bonnie
1: c1d0         Driver : N/A
```

To add the test case to the created group, type the following command.

```
sut# hctsclid add-testcase -g 1 -d 1 bonnie
Test Case bonnie   id=1 executed on "c1d0" added to group 1.
```

To create another group, type the following command.

```
sut# hctsclid add-group 2
Group 2 added to Custom Test Plan.
```

**EXAMPLE 4–1** Creating a Custom Test Plan *(Continued)*

To list all the devices supported by the `Fs_Stress` test, type the following command.

```
sut# hctsclid list-device Fs_stress
Test Case Device List for Fs_stress:
       1 : c1d0      Driver : N/A
```

To add the test case to the created group, type the following command.

```
sut# hctsclid add-testcase -g 2 -d 1 Fs_stress
Test case Fs_stress  id=2 executed on  "c1d0" added to group 2.
```

To list the available tunable options for the `Fs_stress` test, type the following command.

```
sut# hctsclid list-option Fs_stress
 Option Description : Enter runtime in seconds(minimum is 600, default is 3600):
        Option Type : TextArgument
        Option Name  : run_time
        Option Value : value
```

To set the tunable option, type the following command.

```
sut# hctsclid set -p run_time=610 -g 2 2
Set tunable options into TestcaseId2 Fs_stress successfully.
```

To enable you to view the custom test plan, type the following command.

```
sut# hctsclid show-testplan
  Category : Storage
         Group : 1
         Test Case Id : 1
         Test Case Name: bonnie
         Device: c1d0
         Group : 2
         Test Case Id : 2
         Test Case Name: Fs_stress
         Device: c1d0
         Option Name : run_time    Value : 610
```

To run the test plan, type the following command.

```
sut# hctsclid run-testplan
Test is active!(Press Ctrl+C to stop the test!)
       System Under Test: 64Bit Mode!
       System configuration in progress...
       Progress: 0%...1%...11%...21%...31%...41%...100%
       Result: Pass!
       Review report: /var/hcts/reports
       Review test logs: /var/hcts/logs
       Note: Customization test is invalid for submission.
```

# Preference

There are seven preference that can be used in GUI and CLI. These preference are.

- **Exit On Error** - When this option is set, Oracle HCTS exits immediately when any test case fails without cleaning up the test environment.
- **Manual Network Setup** - When this option is set, user should configure the IP addresses for the network interfaces to be tested before starting the Oracle HCTS test. See the Oracle HCTS 5.6 online help or man page for more information.
- **Diagnosis** - When this option is set, a few `DTrace` scripts run in parallel with test cases to collect information for debugging. This option should only be used for failure analysis. Certifying when this option is set does not qualify components for HCL submissions.
- **DHCP Network** - When this option is set, the SUT uses Dynamic Host Configuration Protocol (DHCP), to get the IP address for one or more interfaces to be tested in an automatic network setup mode. Make sure to configure your TM system with DHCP server capability if you are testing system, network or serial I/O, or enable DHCP server capability of your Access Points (AP) if you are testing WiFi card.
- **Automatically Add Swap Space** - When this option is set, Oracle HCTS automatically adds the required swap space during the test. Setting up this option is useful when Oracle HCTS requires more swap space for the test initiation.
- **Enable VLAN Test case** - When this option is set, VLAN test case will be enabled in Network Certification Test. Make sure the SUT and the TM are connected back-to-back before starting the Network Certification test.
- **Enable NIC-SRIOV Test case** – When this option is set, the NIC-SRIOV test case will be enabled in Network Certification test.

**Caution –** If you are certifying a WiFi card, make sure that you re-scan after you switched the Manual Network Setup global option after modifying the Manual Network.

◆ ◆ ◆ CHAPTER 5

# External Storage Certification

The requirements and configurations needed to certify External Storage devices are different from that of certifying other components with Oracle HCTS. Hence, this chapter is dedicated only to External Storage devices and the procedure to certify them using Oracle HCTS.

This chapter covers the following sections.

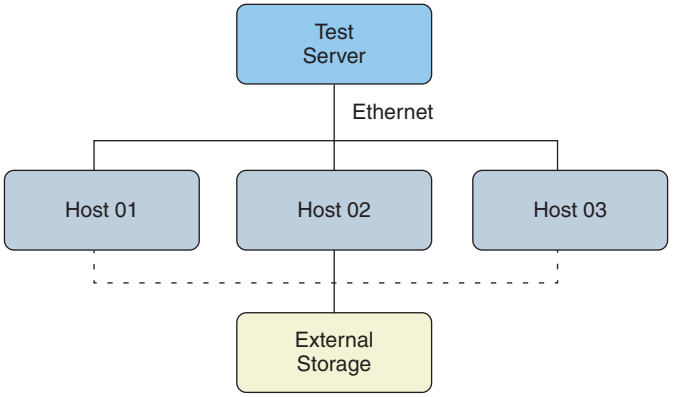

- "Requirements for Certifying External Storage Devices" on page 51
- "Certifying External Storage Devices" on page 52


## Requirements for Certifying External Storage Devices

External Storage certification has certain hardware and software requirements.

### Hardware Requirements

The hardware requirements for certifying External Storage Devices can be schematically represented as shown in the following figure.




The hardware requirements to certify External Storage devices are as follows.

- Four servers are required. One as the test server, and the other three as hosts are connected to external storage.
- Set up at least two multi-hosted disks on external storage for `Host01`, `Host02`, and `Host03`.
- Each host should have two connections to the external storage (for multi-path).
- `Host01`, `Host02`, `Host03`, and test server can be accessed each other through Ethernet.

## Software Requirements

The software requirements to certify External Storage devices are as follows.

- The platform of `Host01`, `Host02`, `Host03` should be the same.
- Install same Oracle Solaris release on `Host01`, `Host02`, `Host03`.
- The tests require reboot process, make sure the network configuration of `Host01`, `Host02`, `Host03` stay the same after rebooting.

# Certifying External Storage Devices

To certifying External Storage devices, you need to first set up the storage environment. You can then certify your devices using either the GUI or command-line interfaces. The following section describes the procedures that need to be followed to certify External Storage Devices.

## ▼ To Set the External Storage Certification Environment

1. **Set up the environment on the Test Server and all 3 hosts, by executing the following steps.**

   a. **Install the `SUNWhcts` and the `SUNWtscsi` packages, by executing the following commands**

   ```
   # pkgadd -d . SUNWhcts
   # pkgadd -d . SUNWtscsi
   ```

   b. **Enable root log into the machine through `rsh`. Edit <*Root Home Directory*>`/.rhosts` and add + + to the head of <*Root Home Directory*>`/.rhosts`.**

   The content <*Root Home Directory*>`/.rhosts` should be as follows.

   ```
   + +
   + scsi
   ```

   c. **Edit `/etc/default/login` feature, and comment the line `CONSOLE=/dev/console`.**

   d. **Restart the login service, by executing the following command.**

   ```
   # svcadm restart svc:/system/console-login:default
   ```

   e. **Make sure the following services are online.**

   ```
   # svc:/network/shell:default svc:/network/login:rlogin
   ```

2. **Enable I/O multipathing feature on all three hosts, by executing the following command.**

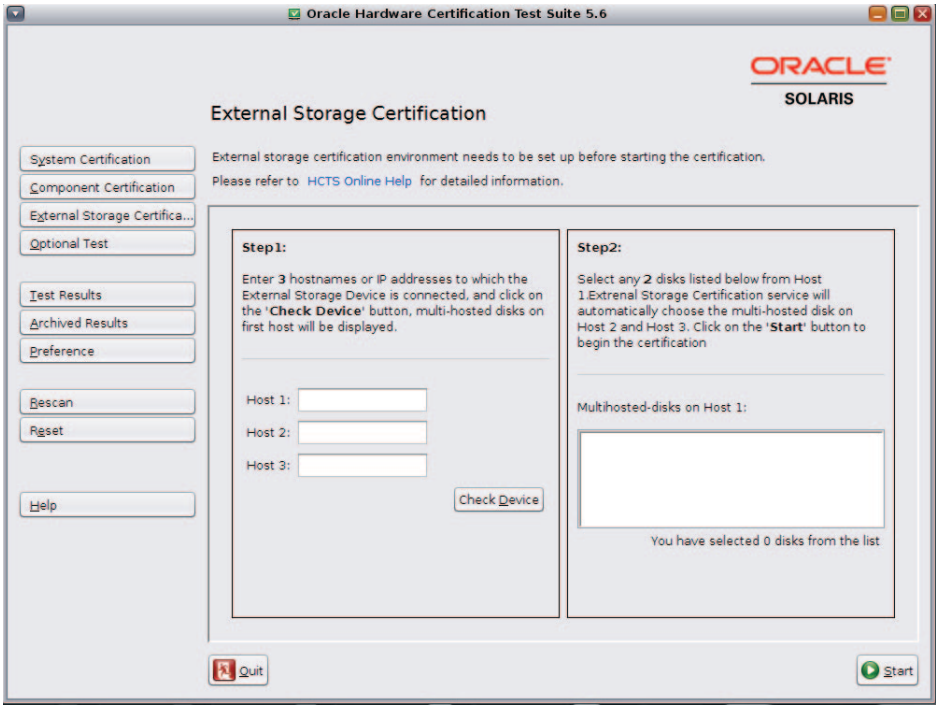
   ```
   # stmsboot -e
   Reboot your machine by typing y, when the command prompts you to do so.
   ```

## ▼ To Certify External Storage on Test Server Using GUI

1. **Start the Oracle HCTS GUI on Test Server.**

2. **When prompted to select a mode for the machine, select System Under Test then click the OK button.**

3 **Click on the External Storage Certification button on the left panel of main window.**


Oracle Hardware Certification Test Suite 5.6
ORACLE
SOLARIS
External Storage Certification
System Certification
Component Certification
External Storage Certifica...
Optional Test
Test Results
Archived Results
Preference
Rescan
Reset
Help
External storage certification environment needs to be set up before starting the certification.
Please refer to HCTS Online Help for detailed information.
Step1:
Enter 3 hostnames or IP addresses to which the External Storage Device is connected, and click on the 'Check Device' button, multi-hosted disks on first host will be displayed.
Host 1:
Host 2:
Host 3:
Check Device
Step2:
Select any 2 disks listed below from Host 1.Extrenal Storage Certification service will automatically choose the multi-hosted disk on Host 2 and Host 3. Click on the 'Start' button to begin the certification
Multihosted-disks on Host 1:
You have selected 0 disks from the list
Quit
Start

4 **Type in the hostnames or IP addresses of three machines respectively in text fields.**

5 **Click Check Devices button.**

External disks found by HCTS will be displayed on the right text areas.

6 **Select any two disks from the list.**

7 **Click the Start button.**

## ▼ To Certify External Storage on Test Server Using CLI

1 **Type the following command to set up the Test Server as System Under Test.**

```
# hctscli setup-sut
```

2 **Type the following command to start the certification of external storage on test server.**

```
# hctscli certify Storage_ESD
```

The following message is displayed.

```
External storage certification environment needs to be set up \
before starting the certification.
Refer to HCTS User Guide/Online Help for detailed information.

Type three hostnames or IP addresses(separated by a space or tab):
```

**3 Type three host names or IP addresses (separated by a space or tab).**

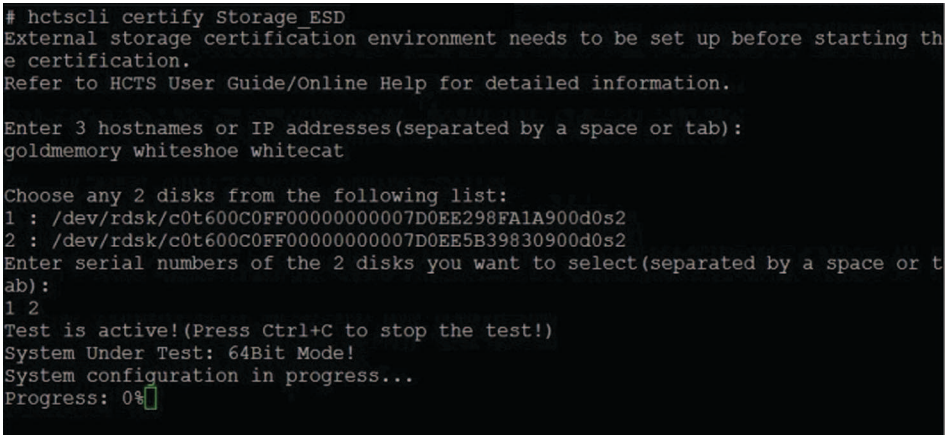
```
Host1 Host2 Host3
Choose any two disks from the following list:
1: Disk1
2: Disk2
3: Disk3
Type the serial numbers of the two disks \
you want to select (separated by a space or tab).
```

**4 Type the serial numbers of the two disks you want to select (separated by a space or tab).**

*1 2*

**Example 5–1** Sample of the External Storage Certification Using CLI

The following image shows an example of the steps for certifying the External Storage Certification.


# hctscli certify Storage_ESD
External storage certification environment needs to be set up before starting th
e certification.
Refer to HCTS User Guide/Online Help for detailed information.
Enter 3 hostnames or IP addresses(separated by a space or tab):
goldmemory whiteshoe whitecat
Choose any 2 disks from the following list:
1 : /dev/rdsk/c0t600C0FF00000000007D0EE298FA1A900d0s2
2 : /dev/rdsk/c0t600C0FF00000000007D0EE5B39830900d0s2
Enter serial numbers of the 2 disks you want to select(separated by a space or t
ab):
1 2
Test is active!(Press Ctrl+C to stop the test!)
System Under Test: 64Bit Mode!
System configuration in progress...
Progress: 0%

◆ ◆ ◆ CHAPTER 6

# WiFi Test Environment Setup

To certify WiFi devices, you need to configure SUT and Test Manager systems. The requirements and configurations needed to certify the WiFi devices are different from that of certifying other components with Oracle HCTS. Hence, this chapter is dedicated only to the WiFi devices and the procedure to certify them using Oracle HCTS.

This chapter covers the following sections.


- "Requirements for Certifying WiFi Devices" on page 57
- "Configuring Access Points" on page 59
- "WiFi Test Environment Setup" on page 59


## Requirements for Certifying WiFi Devices

WiFi certification has certain hardware and software requirements.

### Hardware Requirements

To certify WiFi devices, you need the following hardware.

- Latest version of the Oracle Solaris 11 OS installed on SUT.
- Access Point (AP) - The TM system must have one or more APs to certify the WiFi cards. Ensure that the APs support all the transfer modes and encryption protocols needed to complete a certification. Refer to the respective WiFi card manual for supported transfer modes and encryption protocols that are being tested. Refer to the manual of APs for transfer modes and encryption protocols that are supported by the APs. Refer to WiFi card certification manual test guidelines to know how to set up the WiFi testing environment.

  The TM system must have one functional network port for each wireless network port on the SUT. The TM system must have at least the same number of network ports as the number of wireless network ports as that of the SUT. Each port on the TM system must

connect to an AP that a wireless network port in SUT can connect to. The TM system cannot have more than five ports than the number of SUT wireless network ports.

---

**Note –** Disable the Network Auto-Magic (NWAM) service before starting the WiFi test particularly, in the case of a manual wireless network setup.

To disable the NWAM service, type the following commands in the terminal.

```
# netadm enable -p ncp defaultfixed
# svcadm enable svc:/network/physical:default
```

---

# Software Requirements

Ensure that the TM system is correctly connected to the SUT.

Each wireless network port of the WiFi card to be certified must be connected to one dedicated AP. Each AP involved in the testing must be connected to one network port in the TM system.

Refer to the manual of the particular AP to know about configuring different transfer modes and encryption protocols of the AP. From the manual, you can also check how to enable or disable DHCP of the AP.

In the automatic network setup mode, Oracle HCTS assigns a particular range of IP addresses to the TM system and a different range of IP addresses to the SUT.

Network devices on the TM system must allow their IP addresses to be temporarily changed to `10.10.n.11/24`, where n is 10, 11, or 12 for multiple ports.

Network devices on the SUT must allow their IP addresses to be temporarily changed to `10.10.n.10/24`, where n is 10, 11, or 12 for multiple ports.

All the network devices between the TM system and the SUT must allow the specified IP addresses. If you are testing the DHCP capability of a wireless network port, be sure to enable DHCP on AP and change the IP address pool of the AP to have the IP address `10.10.n.10/24`, where n is 10, 11, and 12, for the multiple ports. The AP must be in the same network segment of the network port on the connected TM system.

# Configuring Access Points

Before you begin to set up WiFi certification testing environment, you need to know how to configure your AP for the following changes.

- Modify SSID (name of the wireless network)
- Change transfer mode (802.11a/802.11b/802.11g/802.11n)
- Change encryption protocol (none or WEP or WPA)
- Change the pass phrase when encryption protocol is set to WEP or WPA
- Enable or disable the DHCP server function
- Change the DHCP IP address pool
- Configure the wireless MAC filter (optional)
- Change the IP address of AP (optional)

If your AP is capable of being a router, you also need to know the physical RJ45 port for WAN/Internet connection and the port for LAN connection. Refer to the user's manual of your AP to make the changes or consult your vendor for technical support.

# WiFi Test Environment Setup

This section describes how to set up the WiFi testing environment to certify your WiFi devices by using the Oracle HCTS application.

## Set up Test Manager System

To use the automatic network setup mode for testing that includes the DHCP, set up TM in the automatic network setup mode. To use the manual network setup mode for testing, for example, for verifying target support WEP and WPA encryption protocols, set up the TM in the manual network setup mode.

Configure the TM as mentioned in "Configuring Test Machines to Run Oracle HCTS" on page 12.

## Placing the Access Points

Pick a good location for the APs that are involved in the testing process. The stability and actual transfer speed during testing depends on the physical placement of the APs and the antenna of the target card. For the optimal testing environment, use the following tips to place your APs.

- Place the APs close to the antenna of the target card.
- Antennas of the APs and the target card should be inline to one another. Put your face next to the antenna to find whether the other is visible.

- Antennas transmit weakly at the base where they connect. Hence, do not expect a good reception from the bottom of an AP.
- Keep the antennas at least 0.6 meters from the metal fixtures such as sprinklers, pipes, metal ceiling, reinforced concrete, and metal partitions.
- Keep the AP away from large amounts of water such as fish tanks and water coolers.
- Place the antennas away from various electromagnetic noise sources, especially those in the 2400 to 2500 MHz frequency band.

  The following sources create noise.

  - Computers and fax machines - should not be closer than 0.3 meters
  - Copying machines, elevators, and cell phones - should not be closer than 2 meters
  - Microwave ovens - should not be closer than 3 meters

# Connecting Access Points to Test Manager

Use the standard Ethernet cable to connect the AP involved in testing to the TM machine. If your AP has multiple Ethernet ports, connect the TM to one of the LAN ports. Refer to the user manual of your AP regarding the Ethernet ports for LAN connection.

# Setting Up Access Points

You need to set up the following parameters for WiFi certification.

- **Provide the name or Service Set Identifier (SSID) of the AP**:

  Provide the name or SSID of the AP to a string that is easy to remember and one that clearly indicates that the AP is involved in testing, for example `HCTS_test`. Write the existing name (SSID) so that you can select the correct wireless network from the Oracle HCTS UI in the automatic network setup mode or execute the `connect` commands in the manual network setup mode.

  Some special characters such as, `:`, `?`, and `\` have certain meanings in the Oracle Solaris OS and are handled differently. If these characters appear in the name of a wireless network, Oracle HCTS might behave abnormally. Although some special characters might be valid in your AP, use an alphanumeric string as the name of the wireless network for the Oracle HCTS test.

- **Provide the IP address of the AP**:

  The IP address of the AP should be in the same subnet as the TM, SUT, and the target card. Provide an IP address that does not conflict with the existing IP address of the TM and the IP address that the target card uses. Set the AP to use the IP address you provided. Alternatively, you can change the TM's IP address and the IP address that the target card uses.

- **Enable the DHCP server function and set up a proper IP address pool**:

  To verify that the target card can get the IP address from the AP and works correctly in the subsequent data transfer job, the DHCP server function of the AP needs to be enabled. Simultaneously, set up a proper IP address pool to ensure that the target card gets an IP address valid for Oracle HCTS testing. Refer to"Software Requirements" on page 17 and the man pages to learn the valid IP address for Oracle HCTS testing in the automatic and manual network setup mode.

  If your AP supports IP address reservation, that is, always offers the assigned IP to a certain MAC address, set the valid IP address for Oracle HCTS testing for the target card into the IP address reservation table.

  If your AP supports MAC filter, which means that only the wireless client adapters with registered MAC addresses can connect to the AP, enable the DHCP function and add the MAC address of the target card to the allowed MAC address list of the AP.

- **Change the transfer mode to the mode to test**:

  Your AP might have advanced options for transfer modes. Keep the default value unless you have to change them.

  For channel setting, unless you must use a specific channel, retain the setting to let the AP automatically choose a channel.

  If your AP has a region setting that enables you choose the country or area that the AP is working, ensure that you select the correct place. It might not be legal to operate the AP in a region other than the specified region. If your country or region is not listed, check with your local government agency or check the web site of the AP vendor for more information about the channels.

- **Change the encryption protocol to the protocol to test**:

  Your AP might have advanced options for encryption protocols. Leave the default option in place unless you have to change them.

  To test encrypted transfer, set the key or pass phrase for the wireless network. Note the key or pass phrase that you set for reference.

  If you plan to test WPA (TKIP) or WPA2 (AES), ensure that you do not set a very short key renewal period. If the specified key renewal period is short, the network load for key renewal becomes very high and communication becomes unstable. Set the key renewal period to one hour or more.

# WiFi Certification by Using the Automatic Network Setup (DHCP)

After setting up the parameters as described in the previous section, perform the following procedure to start the WiFi certification by using the automatic network setup.

### ▼ To Start a WiFi Certification Using DHCP

1. **Start the Oracle HCTS UI.**
2. **If the current network setup mode is manual, set it to automatic as shown below.**

   ```
   # manual network setup=false
   ```
3. **Rescan the system.**
4. **Enable the DHCP network setup option.**
5. **Select the wireless network with the name you set and start the certification.**

## WiFi Certification Using the Manual Network Setup

Perform the following steps to start the WiFi certification by using a manual network setup.

### ▼ To Start a WiFi Certification Manually

1. **Create a security object.**

   To run the test under an encryption protocol, type the following command to create a security object.

   **# dladm create-secobj -c** *wep|wpa security object name*

   When prompted for the value of the object, type the key or pass phrase that you have set.

   To check whether the security object is created successfully, use the following command.

   ```
   # dladm show-secobj
   ```
2. **Plumb the target interface by typing the following command.**

   **# ifconfig** *interface name* **plumb**

   **Note –** Type the `dladm show-wifi` command to get a list of the existing interface names.
3. **Check the availability of the wireless network.**

   To check the availability of the wireless network with the name that you have set, type the following command.

   **# dladm scan-wifi** *interface name*

   If the wireless network that you set up does not appear in the output of the above command, check the settings and setup of your AP. Retype the above command until the wireless network appears in the output.

4. **Check the connection status of the target interface, by typing the following command.**

   **# dladm show-wifi** *interface name*

   If the status of the interface is connected, type the following command to disconnect the interface.

   **# dladm disconnect-wifi** *interface name*

   Wait for a few minutes and type `dladm show-wifi` *interface name* to recheck until the status changes to disconnected.

5. **Connect to the wireless network with the name that you have set. Perform any one of the following steps.**

   - **If the wireless network is not encrypted, type the following command to connect.**

     **# dladm connect-wifi -e <wireless network name>** *interface name*

   - **If the wireless network is encrypted, type the following command to connect.**

**# dladm connect-wifi -e** *wireless network name* **-k** *security object name* **-s** *wep|wpa interface name*

6. **To check the wireless connection status, type the following command.**

   **# dladm show-wifi** *interface name*

7. **Get the IP address from the AP for this interface by typing the following command.**

   **# ifconfig** *interface name* **dhcp**

   Type the following command to verify the connection

   **# TM: ping <***TM's IP address***>**

8. **Start the Oracle HCTS UI.**

9. **Set up the network.**

   If the current network setup mode is automatic, set it to manual by changing the following value.

   **# manual network setup=true**

10. **Rescan the system.**

11. **Select the card that you want to certify, and start the certification.**

# Example

To test the `ath0` interface in the SUT machine, with the wireless network name `HCTS_WiFi`, which is not encrypted.

Type the following command to prepare WiFi certification testing environment.

```
ifconfig ath0 plumb
dladm scan-wifi ath0 (-- Ensure wireless network "HCTS_WiFi" appears in the output.)
dladm show-wifi ath0 (-- Ensure status of "ath0" is "disconnected".)
dladm connect-wifi -e "HCTS_WiFi" ath0
dladm show-wifi ath0 (-- Ensure ath0 is connected to "HCTS_WiFi".)
ifconfig ath0 dhcp
ping <TM's IP address>
```

◆ ◆ ◆ CHAPTER 7

# Certifying the Virtual Platform

Virtual platform refers to the virtual machine instance created by a hypervisor software. This feature of Oracle HCTS 5.6 enables the hypervisor software provider companies to certify virtual platforms for the Oracle Solaris OS on x86 systems. Oracle Solaris OS that is running as a guest on the virtual platform implementation can be tested by using the Oracle HCTS application. Hence the virtual platform can be certified for Oracle Solaris OS compatibility.

**Note –** In the current release, the virtual platform certification feature of Oracle HCTS is the evaluation version. You can only test this feature and provide us the feedback. The certified virtual platforms are not included in the HCL.

This chapter includes the following sections.


- "Implementations of Hypervisor" on page 65
- "System Requirements for Testing Virtual Platforms" on page 66
- "Oracle HCTS on Virtual Platform" on page 67
- "Certifying a Virtual Platform" on page 68
- "Submitting a Virtual Platform to the Oracle Solaris HCL" on page 70


## Implementations of Hypervisor

The hypervisor software has the following implementations.

- In the first implementation, the hypervisor software runs directly on a hardware platform, as an OS control program. A guest operating system runs at the second level above the hardware. For example, the Oracle VM server software runs directly on the hardware.
- In the second implementation, the hypervisor software runs within the host operating system environment. A guest operating system runs at the third level above the hardware. For example, the Oracle VM VirtualBox software runs on the Oracle Solaris OS, the Microsoft Windows OS, and the Linux OS.

# System Requirements for Testing Virtual Platforms

To certify a virtual platform, you need to configure the following test machines.

- Reference Hardware System (RHS) — System in which you must install the host operating system and the hypervisor software. Virtual machines are then created on this hardware with the hypervisor software. To align with the Oracle HCTS product terminology, virtual machines created on the RHS are called Virtual System Under Test (VSUT).
- Test Manager System (TM) — System used by the VSUT to perform tests related to the network. The TM should be a system that is already listed on HCL as Certified.

## Hardware Requirements

RHS and TM must be non productive systems on an isolated network segment. Network testing might generate a flood of traffic on other systems in the network.

RHS has the following requirements.

- Number of CPU Cores — The RHS must have enough CPU cores to ensure that the VSUT has the maximum virtual CPUs that the hypervisor product supports. Each virtual CPU in the VSUT should map to one CPU core of the RHS.
- Memory — The RHS must have enough memory to ensure that the VSUT has the maximum virtual memory that the hypervisor product supports. Refer to the hypervisor manual to determine the minimum and the maximum amount of memory that the respective hypervisor can have.
- Disk space — The RHS should have enough disk space to run the host operating system, the hypervisor product, and the VSUT. Each VSUT should occupy at least 20 Gbyte disk space.
- Network — The RHS should have enough network ports to ensure that each port on the VSUT is able to connect to a network port on the TM. The VSUT should be configured with the maximum virtual network ports that the hypervisor product supports.
- Hardware compatibility with host operating system - If a host operating system is required, the RHS system must be a certified system for the host operating system. Check the Hardware Compatibility List of the host operating system provider.

TM has the following hardware and networking requirements.

The TM system must have one functional network port for each network port on the VSUT. The TM system must have at least as many network ports as that of the VSUT. Each port on the VSUT must be connected to the TM system. The TM system can have no more than five more ports than the VSUT.

## Software Requirements

To certify a virtual platform, you should have the following software.

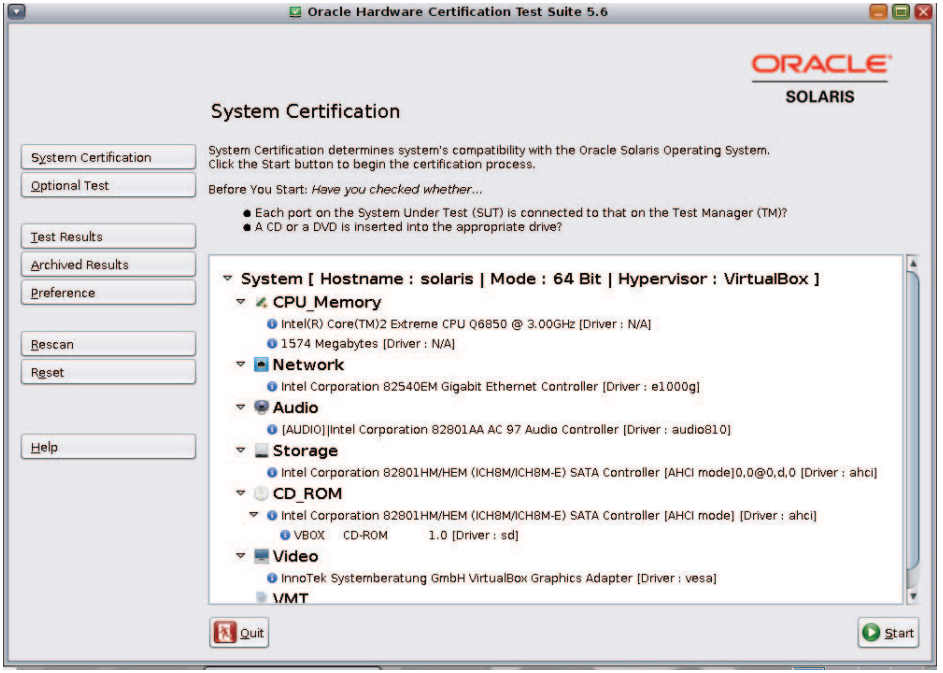
- Host operating system
- Hypervisor software
- Oracle Solaris OS
- Oracle HCTS Application

# Oracle HCTS on Virtual Platform

If you have installed the Oracle HCTS application on the Oracle Solaris OS or the Oracle Solaris 11 OS that is running as a guest on the virtual platform, you can only certify the whole system, but not an individual component. Hence, the Component Certification button is not be seen on the Oracle HCTS screen. An individual component in the virtual platform might not be valid for the Oracle Solaris OS HCL submission. The Oracle HCTS window in the virtual platform shows the hypervisor name on which the guest OS is being installed.

The following figure shows the Oracle HCTS application window on the virtual platform.

**FIGURE 7–1** Virtual System Certification


Oracle Hardware Certification Test Suite 5.6
ORACLE
SOLARIS
System Certification
System Certification
Optional Test
Test Results
Archived Results
Preference
Rescan
Reset
Help
System Certification determines system's compatibility with the Oracle Solaris Operating System.
Click the Start button to begin the certification process.
Before You Start: Have you checked whether...
Each port on the System Under Test (SUT) is connected to that on the Test Manager (TM)?
A CD or a DVD is inserted into the appropriate drive?
System [ Hostname : solaris | Mode : 64 Bit | Hypervisor : VirtualBox ]
CPU_Memory
Intel(R) Core(TM)2 Extreme CPU Q6850 @ 3.00GHz [Driver : N/A]
1574 Megabytes [Driver : N/A]
Network
Intel Corporation 82540EM Gigabit Ethernet Controller [Driver : e1000g]
Audio
[AUDIO]|Intel Corporation 82801AA AC 97 Audio Controller [Driver : audio810]
Storage
Intel Corporation 82801HM/HEM (ICH8M/ICH8M-E) SATA Controller [AHCI mode]0,0@0,d,0 [Driver : ahci]
CD_ROM
Intel Corporation 82801HM/HEM (ICH8M/ICH8M-E) SATA Controller [AHCI mode] [Driver : ahci]
VBOX CD-ROM 1.0 [Driver : sd]
Video
InnoTek Systemberatung GmbH VirtualBox Graphics Adapter [Driver : vesa]
VMT
Quit
Start

The result packages are generated after the testing is complete. The term VM is appended to the filename indicating that the package was generated from the virtual platform.

The system setup and the other test procedures remain the same as that of the hardware platform. The procedure for testing the components and creating the custom test plan remains the same as that on the hardware platform which is described in Chapter 4, "Working With Oracle HCTS."

# Certifying a Virtual Platform

Depending on the implementation of the hypervisor software, obtain the system requirements as described in the "System Requirements for Testing Virtual Platforms" on page 66 section. This section describes the procedure to certify the virtual platforms.

## ▼ To Create Oracle HCTS Environment

**1 Install the host operating system.**

If a host operating system is required, follow the user guide of the OS to install the host operating system on the RHS.

2 **Install the hypervisor.**

Follow the user guide of the hypervisor product to install it on the host operating system or on the RHS.

3 **Create a Virtual Machine.**

Follow the user guide of the hypervisor product to create a virtual machine. Ensure that the virtual machine has the maximum number of virtual CPUs, virtual memory and network ports that the hypervisor product supports. Allocate more than 20 Gbyte disk space for this virtual machine.

4 **Customize the Oracle Solaris OS installation.**

See "Configuring the Oracle Solaris 10 OS Installation" on page 25 for the customization that needs to be done while installing the Oracle Solaris OS.

See "Configuring the Oracle Solaris 11 OS Installation" on page 26 for the customization that needs to be done while installing the Oracle Solaris 11 OS.

5 **Install the Oracle HCTS application.**

Perform the following steps to install the Oracle HCTS application on your virtual machine.

a. **On the VSUT and TM terminals, type the following command to extract the `hcts.5.6.tar.gz` file.**

```
# $ gzip -cd hcts.5.6.tar.gz | tar xvf -
```

The contents are extracted in the newly created `hcts5.6` directory that is placed in the path where you have downloaded Oracle HCTS 5.6.

b. **On the VSUT and TM terminals, type the following command to install Oracle HCTS.**

```
# su
# /usr/sbin/pkgadd -d . SUNWhcts
```

6 **Configure the VSUT, by typing the following command.**

```
# /opt/SUNWhcts/bin/reconfigure
```

The command line messages are displayed.

a. **Type `y` for : `Do you want to set up HCTS executing environment (y/n) ?`**

b. **Type `y` for : `Is Solaris running on a virtual machine (y/n) ?`**

c. **Type the hypervisor name and the version number.**

Follow the prompt message and reboot VSUT.

7 **Run the Oracle HCTS application.**

Use the same procedure as described in the Chapter 4, "Working With Oracle HCTS," to set up the TM. Refer to the software requirements described in Chapter 2, "System Requirements," to set up the network on the VSUT and connect the RHS and TM properly. Then start the Oracle HCTS test on the VSUT.

# Submitting a Virtual Platform to the Oracle Solaris HCL

Run the Oracle HCTS system certification test to certify the virtual platform.

If the hypervisor supports several options for network configuration or storage configuration when creating a virtual machine, each option should be tested at least once. This test might result in the execution of the Oracle HCTS system certification test several times.

If the hypervisor supports both the Hardware Virtual Machine (HVM) guest and the para virtual guest, then each type of guest should be tested.

If the hypervisor can run on multiple host operating systems, test the virtual platforms on each host operating system separately. You need not certify the virtual platforms on all the host operating systems that the hypervisor supports. Only those host operating system that are tested on the virtual machines are listed in the Oracle Solaris OS HCL.

To list a virtual platform as Certified on the Oracle Solaris OS HCL, submit the following information to the Oracle HCTS team for auditing and publishing purposes.

1. Information about the hypervisor product. Include the company name of the hypervisor provider, name of the hypervisor, and the version of the hypervisor.
2. Information of the RHS, manufacturer name, model name, and BIOS version.
3. Information of the host operating system if applicable, name of the manufacturer, name of the operating system, and version number.
4. Oracle HCTS test result packages. If there are multiple test result packages, explain them in the note.
5. Submitter information. Submitter's name, email address, and company name.
6. Any nonstandard configuration of the RHS, host operating system, hypervisor product, and the Oracle Solaris OS.

---

**Note –** Virtual platforms cannot be submitted to the HCL for this release. However, you can send your feedback.

---

◆ ◆ ◆ CHAPTER 8

# Manual Tests

USB and WiFi devices can be further tested since a few of these tests are not automated. Manual tests ensure that the devices are in the working condition to work with the Oracle Solaris OS.

This chapter includes the following sections.


- "USB Manual Tests" on page 71
- "WiFi Card Manual Tests" on page 76
- "Suspend/Resume Manual Tests" on page 77


## USB Manual Tests

In Oracle HCTS 5.6, the following sample component certifications require manual configuration.


- "USB Keyboard Tests" on page 71
- "USB Web cam Test" on page 73
- "USB Hard Disk, Solid-State Storage Device, and Multimedia Card Reader Test" on page 73
- "USB CD/DVD Reader Tests" on page 74
- "USB CD/DVD Writer" on page 74


### USB Keyboard Tests

You need to perform the following USB Keyboard manual tests.

- Plug or unplug test
- Usability test
- Internationalization test

## ▼ To Perform the Plug or Unplug Test

**Before You Begin** Before starting the automated USB keyboard certification, unplug the keyboard to be certified from the SUT then plug it back. Repeat this test 10 times.

- **Start the Oracle HCTS 5.6 user interface.**

**More Information**

### Expected Result

After this step, Oracle HCTS can detect the keyboard to be certified.

## ▼ To Perform the Usability Test

1. **Open a few applications in the Oracle Solaris OS.**

   Log in to the Oracle Solaris OS and open applications such as `gnome-terminal (JDS)`, `gedit (JDS)` or `firefox (JDS)`.

2. **Verify the functionality of each key in the keyboard.**

   Ensure that every key and key combination on the keyboard are operating as expected. Also, make sure that the right key events are received when you press the keys.

---

**Note –** Pay attention to any keys that do not exist in the US keyboard layout or those mapped differently than the US keyboard layout.

---

**More Information**

### Expected Result

Each key generates the correct character onscreen or correct key event.

## ▼ To Perform the Internationalization Test

1. **Switch as the root user.**

2. **Set the keyboard type and layout by typing the following command.**

   ```
   # /usr/X11R6/bin/xorgconfig
   ```

3. **Restart XServer.**

4. **Open a few applications in the Oracle Solaris OS.**

   Log in to the Oracle Solaris OS and open some applications such as `gnome-terminal(JDS)`, `gedit(JDS)` or `firefox(JDS)`.

5 **Verify the functionality of each key in the keyboard.**

Ensure that every key and key combination on the keyboard is operating as expected. Also, make sure that the right key events are received when you press the keys.

**More Information**

### Expected Result

In Step 3, when you restart Xserver, no layout error is reported. Characters specific to the keyboard layout are shown correctly in `dtlogin`.

---

**Note –** Ensure that the language selected in `dtlogin` corresponds with your keyboard layout.

---

In Step 5, each key generates the correct character on screen or correct key event.

# USB Web cam Test

To certify a stand alone USB web cam that is not built into the system, you need to perform the plug or unplug test before starting the automated USB web cam certification.

## ▼ To Perform the Plug or Unplug Test

**Before You Begin** Before starting the automated USB web cam certification, unplug the web cam to be certified from the SUT then plug it back. Repeat this test 10 times.

- **Start the Oracle HCTS 5.6 UI.**

**More Information**

### Expected Result

After this step, Oracle HCTS can detect the USB web cam to be certified.

# USB Hard Disk, Solid-State Storage Device, and Multimedia Card Reader Test

To certify a stand alone USB hard disk, solid-state storage device, or multimedia card reader, that is not built-in with the system, you need to perform the plug or unplug test before starting the automated USB storage certification.

## ▼ To Perform the Plug or Unplug Test

**Before You Begin** Before starting the automated USB storage certification, unplug the storage device to be certified from the SUT then plug it back. Repeat this test 10 times.

- **Start the Oracle HCTS 5.6 UI.**

**More Information** Expected Result

After this step, Oracle HCTS can detect the USB storage device to be certified.

# USB CD/DVD Reader Tests

You need to perform the following CD/DVD reader manual tests.

- Plug or unplug test
- Boot computer test

## ▼ To Perform the Plug or Unplug Test

**Before You Begin** Before starting the automated USB CD/DVD reader certification, unplug the CD/DVD reader to be certified from the SUT then plug it back. Repeat this test 10 times.

● **Start the Oracle HCTS 5.6 UI.**

**More Information** Expected Result

After this step, Oracle HCTS can detect the CD/DVD reader to be certified.

## ▼ To Perform the Boot Computer Test

1. **Insert a bootable Oracle Solaris OS installation disk in the CD/DVD reader to be certified.**
2. **Reboot the SUT machine.**
3. **Change the SUT settings to boot from the USB CD/DVD drive.**
4. **Save this change and start the SUT.**

**More Information** Expected Result

After Step 2, SUT boots from the CD/DVD reader and the Oracle Solaris OS installation process begins.

# USB CD/DVD Writer

You need to perform the following CD/DVD writer manual tests.

- Plug or unplug test
- Boot computer test

- Media support test

## To Perform the Plug or Unplug Test

**Before You Begin** Before starting the automated USB CD/DVD writer certification, plug and unplug the CD/DVD writer to be certified from the SUT. Repeat this test 10 times.

- **Start the Oracle HCTS 5.6 UI.**

**More Information** Expected Result

After this step, Oracle HCTS can detect the CD/DVD writer to be certified.

## To Perform the Boot Computer Test

1. **Insert a bootable Oracle Solaris OS installation disk into the CD/DVD writer to be certified.**
2. **Reboot SUT machine.**
3. **Change the SUT settings to boot from the USB CD/DVD drive.**
4. **Save this change and start the SUT.**

**More Information** Expected Result

After Step 2, SUT boots from the CD/DVD writer and the Oracle Solaris OS installation process begins.

## To perform the Media Support Test

1. **Check the Re-writable Media**

   For each supported re-writable media such as CD-RW, DVD+RW, DVD-RW, and DVD-RAM, insert a disk in the drive that is under test.
2. **Perform the automated USB CD/DVD writer certification test.**

**More Information** Expected Result

For all the supported re-writable media, the automated USB CD/DVD writer certification is passed.

# WiFi Card Manual Tests

The WiFi cards support the following manual tests.

- Transfer mode test
- Encryption protocols test

## ▼ To Perform the Transfer Mode Test

**Before You Begin** To test whether the WiFi card supports various transfer modes, you must have the following prerequisites.

- One or more APs that support all the transfer modes. The `802.11b`, `802.11g`, `802.11a`, and `802.11n` standards are commonly supported by the target card and the Oracle Solaris OS.
- One machine that is set up as a TM.
- AP must be correctly connected to the TM machine.

1. **Set up the AP.**

   Set up the AP to work in one of the transfer modes commonly supported by the target card and the Oracle Solaris OS.

2. **Enable the DHCP server capability of the AP.**

3. **Reboot the Oracle Solaris OS on the SUT and start the Oracle HCTS UI.**

4. **Enable the DHCP Network global option.**

5. **Perform the WiFi certification test.**

6. **Change the transfer mode of the AP.**

   Change the transfer mode of the AP to the next one that is commonly supported by the target card and the Oracle Solaris OS. Alternately, change to another AP that supports a different transfer mode.

7. **Repeat Step 3 to Step 5 until all the transfer modes commonly supported by the target card and the Oracle Solaris OS are tested.**

**More Information**

### Expected Result

WiFi certification test passes on all the transfer modes tested.

### ▼ To Perform the Encryption Protocol Test

**Before You Begin** To test whether the WiFi card supports various encryption protocols, you must have the following prerequisites.

- One or more APs that can support the encryption protocols, namely, none, WEP, and WPA which are commonly supported by the target card and the Oracle Solaris OS.
- One machine that is set up as a TM.
- AP must be correctly connected to the TM machine.

1. **Set up the AP**

   Set up the AP to work with one of the encryption protocols that are commonly supported by the target card and the Oracle Solaris OS.

2. **Reboot the Oracle Solaris OS on SUT and start the Oracle HCTS UI.**

3. **Run the transfer modes tests described in the procedure "To Perform the Transfer Mode Test" on page 76.**

4. **Change the encryption protocol.**

   Change the encryption protocol of the AP to the next one that is commonly supported by the target card and the Oracle Solaris OS. Alternately, change to another AP that supports a different encryption protocol.

5. **Repeat Step 2 and Step 3 until all the encryption protocols that are commonly supported by the target card and the Oracle Solaris OS are tested on the card.**

**More Information**

#### Expected Result

WiFi certification test passes on all the encryption protocols tested.

---

**Note –** For the WEP (Wired Equivalent Privacy) and WPA (Wi-Fi Protected Access) modes of test, you must use the manual network setup to set up the wireless connection for testing.

---

# Suspend/Resume Manual Tests

You need to perform the following manual tests for the Suspend/Resume feature.

- Pre setup
- Pre test
- Simple suspend and wake up tests
- Device tests

## ▼ To Perform Pre Setup

1 **Add the following line in the `/etc/power.conf` file.**

```
S3-support enable
```

2 **Type the following command in the terminal.**

```
# pmconfig
```

## ▼ To Perform Pre Test

- **Type the following command in the terminal.**

```
# pfexec uadmin 3 22
```

---

**Note –** Failure of these tests is an automatic failure of the Suspend/Resume manual test. No further testing should be performed until you pass this test.

---

## ▼ To Perform Simple Suspend and Wake Up Tests

1 **Type the following command in the terminal.**

```
# pfexec uadmin 3 20
```

The system suspends after performing this step.

2 **Wake up the system**

- Wake up the system by pressing the power button.

  System resumes after pressing the power button.
- Wake up the system by pressing any key on the keyboard.

  System resumes after pressing any key on the keyboard.
- Wake up the system by setting an alarm.
  - To set an alarm, type the following command in the terminal before performing the suspend operation.

    ```
    # echo "rtc_wake/W5" | mdb -kw
    ```

    `W5` indicates that the system will be awakened after 5 seconds
  - To cancel the alarm that is set, type the following command in the terminal.

    ```
    # echo "rtc_wake/W0" | mdb -kw"
    ```

  System resumes automatically after the time you set earlier.

- Wake up the system through the Wake on LAN method.

  System resumes after receiving Wake on LAN magic packet.

## ▼ To Perform Device Tests

Perform the following actions between suspend and resume.

- Remove and apply power while the system is suspended.
- Add or remove the USB stick.
- Add or remove the SD card, if applicable.
- Add or remove the PCMCIA card, if applicable.
- Turn on/off WiFi if possible while the system is suspended.
- Unplug and plug in the projector.
- Add or remove the firewire device, if applicable.

Each of these tests have two distinct steps.

1 **Suspend the system, add the device, and resume the system.**

2 **Suspend the system, remove the device, and resume the system.**

◆ ◆ ◆ APPENDIX A

# Tools in /opt/SUNWhcts/bin

The following table provides a quick reference to the tools and utilities available under `/opt/SUNWhcts/bin/` directory.

**TABLE A–1** Tools Reference

| Tool | Usage | Description |
|---|---|---|
| `ftp_setup` | `ftp_setup [path_name]` | Sets up an FTP anonymous access for using Oracle HCTS. |
| `ftp_clean` | `ftp_clean` | Disables Oracle HCTS FTP anonymous access. |
| `nfs_config` | `nfs_config -e` | Enables Oracle HCTS NFS environment. |
| | | The `/export/home/nfs` directory is shared. |
| | `nfs_config -r` | Restores the NFS modified by Oracle HCTS to the original state. |
| `ssh_config` | `ssh_config -e` | Enables the SSH access for using Oracle HCTS. |
| | `ssh_config -r` | Restores the SSH environment modified by Oracle HCTS to the original state. |

**TABLE A–1** Tools Reference *(Continued)*

| Tool | Usage | Description |
|---|---|---|
| `net_svcs` | `net_svcs -c \| -e \| -r \| -t` | Enables or restores the network services for Oracle HCTS network testing.<br><br>**Note –** To run the Oracle HCTS network test cases correctly, the following services should be in the online status.<br>■ `svc:/network/physical:default`<br>■ `svc:/network/shell:default`<br>■ `svc:/network/ftp:default`<br>■ `svc:/network/rpc/spray:default`<br>■ `svc:/network/nfs/client:default`<br>■ `svc:/network/nfs/mapid:default`<br><br>The Oracle HCTS framework invokes this command automatically before starting the network test cases. In case the services listed above are not in the desired state, run this command to put these services in the correct state for Oracle HCTS network testing. |
| | `net_svcs -c` | Displays the current state of the network services. |
| | `net_svcs -e` | Enables services required for Oracle HCTS network testing. |
| | `net_svcs -r` | Restores network services modified by Oracle HCTS to the original state. |
| | `net_svcs -t` | Temporarily enables the Oracle HCTS network services, which are active until reboot. |
| `make_mixed_mode_cd` | `make_mixed_mode_cd` | Creates a mixed-mode CD for the CD/DVD reader certification and USB CD/DVD reader certification. |
| `reconfigure` | `reconfigure` | Checks and sets up the Oracle HCTS running environment. Restarts the machine and reconfigures devices. |
| `ibgen_config` | `ibgen_config -i` | This command installs `ibgen` driver on the system. |
| | `ibgen_config -r` | This command removes `ibgen` driver from the system. |

**TABLE A–1** Tools Reference *(Continued)*

| Tool | Usage | Description |
|---|---|---|
| `nwam_config` | `nwam_config -d \| -r` | Disables or restores the `nwam` service for Oracle HCTS network testing.<br><br>For Oracle Solaris 11 OS, the `svc:/network/physical:nwam` service should be disabled before starting the Oracle HCTS network test. The Oracle HCTS framework automatically invokes this command. |
| | `nwam_config -d` | Disables the `nwam` service. |
| | `nwam_config -r` | Restores the `nwam` service modified by Oracle HCTS to the original state. |

◆ ◆ ◆ APPENDIX B

# Suspend/Resume Checklist

The following table provides a quick reference to the Suspend/Resume test checklist.

| Machine No | Machine Case Type | Case Name | | | Result | Note |
|---|---|---|---|---|---|---|
| 1 | Manual | Verification Test | `pfexec uadmin 3 22` | | | |
| 2 | Manual | Functional Test | Suspend | `pfexec uadmin 3 20` | | |
| | | | | Power Button | | |
| | | | | Key Press | | |
| | | | | Network | | |
| | | | | Alarm | | |
| 3 | Manual | Simple Cyclic Test | Key press 10 cycles | | | |
| | | | Power button 10 cycles | | | |
| | | | Alarm 10 cycles | | | |

| Machine No | Machine Case Type | Case Name | | Result | Note |
|---|---|---|---|---|---|
| 4 | Manual | Device Test | Power | | |
| | | | USB stick | | |
| | | | SD card | | |
| | | | PCMCIA card | | |
| | | | WiFi | | |
| | | | Plugin projector/external display | | |
| | | | Fire wire | | |
| 5 | Automate | Cyclic and Stress Test | Suspend resume with storage stress | | |
| | | | Suspend resume with network stress | | |
| | | | Suspend resume with USB storage stress | | |
| | | | Suspend resume with USB web camera work | | |
| | | | Suspend resume with audio play and record | | |
| | | | Suspend resume with interrupt stress | | |

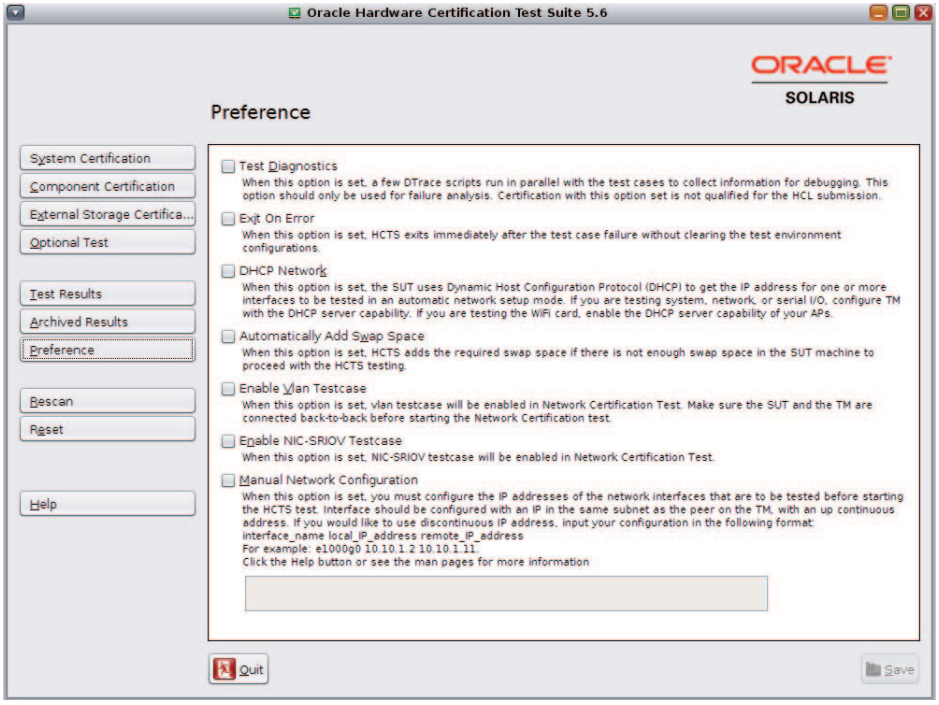
**Note –** The recorded value in the table should be one of the following, Pass, Fail, or Not tested.

◆ ◆ ◆ APPENDIX C

# Manual Network Configuration

The following list describes how to setup a manual network configuration.

- On System Under Test (SUT)
  - Using GUI: To manually configure the IPs, click Options and select Manual Network Configuration, follow the instructions to input the network configuration and then click Save button.


Oracle Hardware Certification Test Suite 5.6
ORACLE
SOLARIS
Preference
System Certification
Component Certification
External Storage Certifica...
Optional Test
Test Results
Archived Results
Preference
Rescan
Reset
Help
Test Diagnostics
When this option is set, a few DTrace scripts run in parallel with the test cases to collect information for debugging. This option should only be used for failure analysis. Certification with this option set is not qualified for the HCL submission.
Exit On Error
When this option is set, HCTS exits immediately after the test case failure without clearing the test environment configurations.
DHCP Network
When this option is set, the SUT uses Dynamic Host Configuration Protocol (DHCP) to get the IP address for one or more interfaces to be tested in an automatic network setup mode. If you are testing system, network, or serial I/O, configure TM with the DHCP server capability. If you are testing the WiFi card, enable the DHCP server capability of your APs.
Automatically Add Swap Space
When this option is set, HCTS adds the required swap space if there is not enough swap space in the SUT machine to proceed with the HCTS testing.
Enable Vlan Testcase
When this option is set, vlan testcase will be enabled in Network Certification Test. Make sure the SUT and the TM are connected back-to-back before starting the Network Certification test.
Enable NIC-SRIOV Testcase
When this option is set, NIC-SRIOV testcase will be enabled in Network Certification Test.
Manual Network Configuration
When this option is set, you must configure the IP addresses of the network interfaces that are to be tested before starting the HCTS test. Interface should be configured with an IP in the same subnet as the peer on the TM, with an up continuous address. If you would like to use discontinuous IP address, input your configuration in the following format:
interface_name local_IP_address remote_IP_address
For example: e1000g0 10.10.1.2 10.10.1.11
Click the Help button or see the man pages for more information
Quit
Save

- Using CLI: To setup manual network on SUT, type the following command in the terminal.

  ```
  # hctscli set -p manual-network
  ```

  You can also check the status of the manual network by typing the following command in the terminal.

  ```
  # hctscli get -p manual-network
  ```

**Note –** Before running these commands, ensure that the network settings meets the following requirements:

- Interfaces are configured with IPv4 addresses in Class C subnets, that is the netmask utilized must be `ffffff00`.
- Each interface is configured with an IP address in a different subnet.
- Each interface should be up and running.
- Interfaces must be configured to match corresponding interfaces on the TM. For example, if an IP address configured on the TM is `10.10.10.11`, then the IP address on the SUT must be `10.10.10.10`.

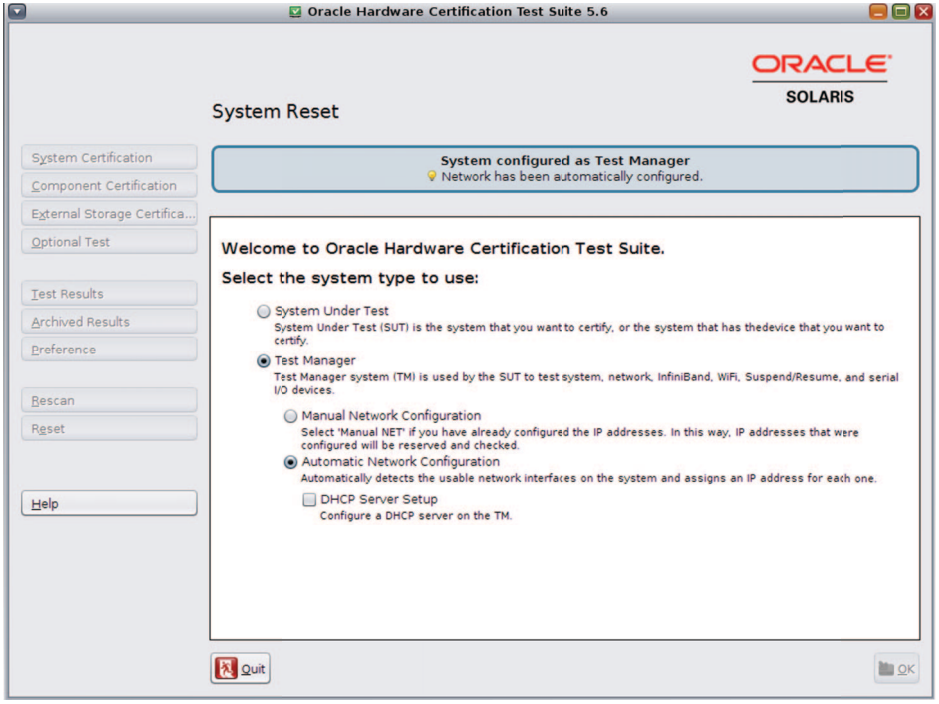
If discontinuous IP address are used in a given subnet, a configuration file must be generated. The format of each line in the file is as follows:

*interface_name local_IP_address remote_IP_address*

For example, `e100g0 10.10.1.2 10.10.1.11`.

The configuration file must be saved as `/opt/SUNWhcts/etc/sut_manual_ip.conf`. If a configuration file is specified, all interfaces to be tested must be represented in this file.

- On Test Manager (TM)
  - Using GUI: Select Manual Network Configuration and then click the OK button.


Oracle Hardware Certification Test Suite 5.6
ORACLE
SOLARIS
System Reset
System Certification
Component Certification
External Storage Certifica...
Optional Test
Test Results
Archived Results
Preference
Rescan
Reset
Help
System configured as Test Manager
Network has been automatically configured.
Welcome to Oracle Hardware Certification Test Suite.
Select the system type to use:
System Under Test
System Under Test (SUT) is the system that you want to certify, or the system that has thedevice that you want to certify.
Test Manager
Test Manager system (TM) is used by the SUT to test system, network, InfiniBand, WiFi, Suspend/Resume, and serial I/O devices.
Manual Network Configuration
Select 'Manual NET' if you have already configured the IP addresses. In this way, IP addresses that were configured will be reserved and checked.
Automatic Network Configuration
Automatically detects the usable network interfaces on the system and assigns an IP address for each one.
DHCP Server Setup
Configure a DHCP server on the TM.
Quit
OK

- Using CLI: To control the network configuration while setting up the Test Manager, type any of the following commands in the terminal.

  ```
  # hctscli setup-tm -m
  ```

  or

  ```
  # hctscli setup-tm --manual
  ```

---

**Note –** Before running these commands, manually configure the network interfaces to be used in Oracle HCTS following these rules:

- Interface is configured with an IPv4 address in class C subnet, so the netmask used should be `ffffff00`.
- Different interfaces are configured with IP addresses in different class C subnet.
- Interface should not be configured with DHCP address.
- Interface should be up and running.

---